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The Farmer's Digest

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Which Cow is the Better Buy?

Use your pencil to save money next time you buy cows . . .

Condensed from The Agricultural Situation

G. E. Frick and W. F. Henry

MANY dairymen find it pays them to buy a few cows for herd replacements. And when it comes time to buy one, it is always hard to choose the best cow from those available. However, there are some "tricks of the trade" that help here. If you are a dairyman and have this problem, you would do well to keep them in mind.

Generally, the man who has a dairy cow to sell names the price he wants for her. This price usually takes into account the cow's physical condition and her proved or probable ability as a milk producer. However, largely owing to competitive beef prices, the price range between the best and the poorest dairy cow is fairly narrow.

This situation is one to watch for. If you are on the alert for it, a little figuring can lead you toward profitable purchases.

Before deciding to buy a cow for herd replacements, make an estimate of her future milk production possibilities and life expectancy in the herd.

Some Points to Consider

Pedigree by itself doesn't guarantee high production. Neither does dairy type or appearance, although it is one indication.

The best basis for an estimate, however, is a complete production record. If you can't get a record for longer, and you know the approximate date of freshening, even one day's record will help a lot. From this, it's possible to judge annual production within a reasonable margin of error. But take into full account the condition under which the record was made. Look at the age of the cow, how well she has been fed and handled, how she has been managed in the past.

Important, too, is the cow's ex-

Reprinted from The Agricultural Situation
Washington 25, D. C.

pected future herd life. In general, a cow in the age group of 2 to 5 years can be expected to live about four additional years. A cow in the age group of 5 to 8 years can be expected to live about three and a half years. A cow in the age group of 8 to 11 years can be expected to live about two and a half more years.

Sharpen Your Pencil

With these things taken care of, you are ready to do some figuring. Say you want to choose between one of two cows. Let's call them cow A and cow B. Suppose your estimate of cow A's production per year is 10,000 pounds and that for cow B is 8,500 pounds. Suppose both cows were in the same herd with similar management. Cow A is 6 years old and cow B is 4 years old. The asking price for cow A is $375 and cow B $300. Which is the better buy?

Suppose your estimate of a year's milk income is $400 for cow A and $340 for cow B, based on a price estimate of $4 per hundredweight for milk. And suppose you judge that cow A will eat 2,000 pounds of grain in a year, and that cow B will take 1,700 pounds. Now make an estimate of the future grain price for the year. Let us say you figured the grain bill for cow A would be $80 per year and for cow B $68 per year. Therefore, for cow A milk income above grain costs would be $320, for cow B $272.

Next, look at depreciation. The figures given here are just examples. Say that the purchase price for cow A is $375. With an estimated salvage value of $150, total net depreciation would be $225. With the same salvage value for cow B and the purchase price set at $300, total net depreciation would be $150. Dividing the total depreciation by the expected future herd life of the cow (three and a half years for cow A, four years for cow B), the net depreciation cost per year for cow A would be $64, for cow B $38.

For cow A the difference between net income above grain costs and yearly depreciation is $256 ($320 minus $64). For cow B the difference is $234.

Therefore, cow A will annually return $22 more net income than will cow B. If the difference in returns between cows is quite small, it is obviously a matter of indifference which cow is purchased. However, in such a case, if the purchase price of the two cows is greatly different, then interest charges will determine the best buy. In this example the purchase price of cow A exceeds that of cow by $75. This difference compounded at the interest rate of five per cent for three and a half years (future herd life of cow A) will average $4 per year and still leave cow A—the higher priced cow—as the better buy.

Feeding Runt Pigs

Michigan experiments show runt pigs do better on mixed rations than free choice

Condensed from Hog Breeder

T. A. Hoefer, R. W. Luecke and F. Thorp, Jr.

METHOD of feeding is very important in swine management. Many runts develop, some pigs die and others make inefficient use of their feed because of poor feeding methods.

Self-feeding is by far the most popular way of feeding growing-fattening pigs. Experience has shown that this method results in faster gains on less feed with far less labor than handfeeding. Likewise free-choice feeding, a method of feeding which allows the pig to select his own ingredients, has always been popular because it eliminates the need for mixing the various feeds and supplements used to make a complete ration.

Free-choice feeding is based upon the idea that pigs will, when given a choice of a grain and various supplements, always balance their ration correctly. Since the choice of feed made by the pig appears to be influenced greatly by palatability it would appear that there may be many conditions under which the pig fed free-choice may actually be suffering from a nutrient deficiency because of poor feed selection. Palatability is not necessarily related to nutritive completeness; corn, for example, is extremely well liked but is also very deficient in a number of essential nutrients.

With the thought that many pigs may be runts because of their inability or failure to select the right feeds when fed free-choice it was decided to make a comparison between a complete mixed ration and a free-choice ration of corn and a complete supplement.

Eighteen typical runt pigs were used to form two uniform lots of nine pigs each. These pigs averaged 8 to 10 weeks of age and ranged in weight from 12 to 21 pounds. All were scouring and showed the thin, emaciated, un-

Reprinted by permission from Hog Breeder
Chicago, Illinois

thrifty appearance so characteristic of runt pigs. To eliminate the effect of parasites, all pigs were sprayed with lindane for lice and mange, and wormed with sodium fluoride before being started on experiment. The pigs were fed and housed in small, outside, paved lots.

One lot was self-fed a complete mixed ration, and the other lot was offered corn and a supplement free-choice in a divided compartment self-feeder. The supplement was complete for proteins, minerals and vitamins and was formulated so as to supply the same nutrients as the complete mixed ration. The antibiotic terramycin was added to both rations at the rate of 5 mg. per pound of complete ration and 15 mg. per pound of supplement.

A study of the results reveals that while there was little difference in the average rate of growth between the two groups of pigs there was a very significant difference in feed utilization. The pigs fed the complete mixed ration required only 2.08 pounds of feed per pound of gain whereas the free - choice - fed pigs needed 2.76 pounds of feed for each pound of gain, a difference of 23.9 per cent in favor of the mixed ration.

The pigs fed free-choice ate 0.74 pound more feed per day and selected corn and supplement in such proportions so as to make a ration of 16 per cent protein. This compares with the 17.1 per cent protein content of the complete ration. In spite of selecting a ration a little lower in percentage of protein, the free-choice-fed pigs actually had a protein intake 0.10 pound higher than the pigs on the complete ration.

However, when this protein intake is broken down as to origin it is interesting to note that 44 per cent of the protein intake of the free - choice - fed pigs came from corn, whereas in the case of the pigs on the mixed ration, corn supplied only 37 per cent of the protein. This difference in protein intake may be a partial explanation for the great difference in efficiency of feed utilization between these two lots of pigs since it is known that corn protein is of very poor quality.

The feed consumption figures obtained in this experiment would seem to indicate that palatibility and not nutritive completeness is the major factor influencing the pigs' selection of feed and resulted in this trial in the free-choice-fed group eating 45.2 per cent more corn and only 14.5 per cent more supplement than the group which had no choice.

It was observed at the end of the experiment that the pigs in the free - choice lot showed far greater variation in size than the pigs on the mixed ration, which

suggests that individual pigs differ in the way they select free-choice feeds. A pig may be unthrifty because of an inherently higher requirement for nutrients, and under a free-choice method of feeding this condition may be aggravated by the pigs inability to balance his ration correctly.

The very excellent gains and feed conversion records made by the runt pigs used in this experiment, particularly those fed the complete mixed ration, indicate that with proper nutrition a very high percentage of runt pigs can be made to grow into profitable hogs. It is necessary to fortify the ration with adequate B vitamins and an antibiotic to stimulate appetite and to reduce or eliminate the scouring which is typical of most runt pigs.

In this experiment scouring stopped in both lots after one week on the fortified rations. Appetite stimulation is very important because observation indicates that many runts are semi-starved simply because of appetite failure. The complete mixed ration seems to give best results with unthrifty pigs because it insures an adequate balanced intake of nutrients with each bite of feed.

How to Make More Money on Corn

Agronomists estimate that fixed production costs on any corn field averaged $31.66 per acre. That was true on fields averaging 48 bushels per acre and on those averaging 106 bushels. Such fixed costs include plowing, planting, cultivation, interest on investment, depreciation on buildings and machinery and other items.

The cost of seed, fertilizer, harvesting and interest needed to make 48 bushels of corn per acre was $10.82, boosting the total production cost to $42.48 per acre. That was an average cost of 88 cents per bushel.

With corn at $1.50 per bushel, the 48 bushel yield gave a gross return of $72 and a net profit of $29.62 per acre.

To make 106 bushels per acre, the variable costs averaged $44.58, including $34.74 spent on fertilizer. This boosted the total production cost to $76.24 per acre but the cost per bushel dropped to 77 cents.

The gross return from 106 bushels per acre was increased to $159. This left the farmer with a net profit of $82.76. That was nearly three times the profit per acre from the 48 bushel yield. The use of fertilizer meant the difference in profits between the two fields.

Nebraska Extension

Things you didn't know before about

HOW CATTLE GRAZE

Condensed from Nebraska Farmer

J. W. Turelle

Soil Conservation Service

HOW cattle graze has been the subject of many cowboy controversies, and is always worth some discussion when cattlemen meet.

The mouth of a cow has a cutting swath of only about two and a half inches. Yet she can harvest as much as 150 pounds of green grass per day with time out for cud chewing, resting, watering, salting and other miscellaneous activities of any normal cow.

Cattle use their sense of smell in selecting and grazing the forage they desire. They prefer succulent forage and this usually provides adequate proteins, carbohydrates and minerals.

Studies throughout this country and in other parts of the world give proof of the inherent ability of cattle to select nutritious forage if there is a choice. In one test in this country, for example, samples were taken both of the herbage actually eaten and of herbage in the same area which was not eaten. The average composition of the 35 pairs of samples showed that the forage eaten contained considerable more phosphorus, calcium and potash than the forage which was not eaten.

The mechanical processes involved in the grazing of forage are worth considering. Essentially, cattle pull the leaves and stems from a plant with their two jaws. Since cattle have no teeth in the front of the upper jaw, grass is pulled off rather than cut off. One row of eight cutting teeth in the lower jaw, when pressed against the muscular pad of the upper jaw, permits them to tear the leaves and stems from the plant. The tongue is in constant action during grazing, usually protruding rapidly first from one side of the mouth and then the other side.

The tongue whips around the choicest leaves and stems for collection prior to the bite, and is also used in the swallowing proc-

Reprinted by permission from Nebraska Farmer
Lincoln, Nebraska

ess. A cow moves her head from side to side as she moves forward, the neck being flexed in a 90 degree arc. On the average, a cow will take from 50 to 70 bites per minute, but on occasions if the grass is good and the cow is hungry, she will take as many as 90 bites per minute.

Cattle under normal conditions during a 24 hour period will graze eight hours, and chew the cud about eight hours. They do not ruminate while being trailed, worked or when sick.

There are many factors which tend to modify the grazing, ruminating and resting habits of cattle. For example, periods between rests on tall grass may be longer than on short grass, although the total time devoted to grazing in any one day may be the same for each range type. A three year study by the University of Nebraska confirms this statement. The total grazing time per day in each location was the same, but each period of grazing in the hardlands was about half that in the sandhills. This was equally true of the resting period.

The condition of the range does not materially alter total time devoted to grazing. In other words, cattle generally do not graze much longer when the forage is deficient to compensate for the lack of grass. Grazing time per day is somewhat constant on ranges irrespective of range conditions.

The digestive tract of a cow may have more bearing on time spent in grazing than does pasture condition. A certain length of time must be devoted to "chewing the cud," watering, salting and resting.

Ruminants (animals that chew the cud) have a compound stomach which consists of four distinct compartments. These four stomachs in a cow have a large capacity, holding as much as 50 gallons. This is quite different, for example, than the stomach of a horse, which is simple and holds only three to five gallons.

Cattle crush and grind forage with their grinder teeth, 24 in number, six on each side of the lower jaw and six on each side of the upper jaw. This chewing requires considerable jaw movement. It has been found that dairy cows make about 41,000 jaw movements a day in chewing.

When cattle are eating, they chew their food only enough to moisten it, if it is dry, and to form it into masses of suitable size to be swallowed. On being swallowed these food masses pass into the paunch, where they are softened and mixed thoroughly. The food then passes on to the second stomach.

When a ruminant "chews its cud," the mass of solid food, along with the liquid, is carried

from the second stomach and the paunch into the gullet, where it is forced up to the mouth. Here the liquid portion is quickly swallowed, and the solid part is then thoroughly chewed, after which it is again swallowed. It passes first into the paunch, and then into the second stomach, from which it enters the third and fourth stomachs and finally continues on through the rest of the digestive tract.

Direction of wind is often a factor in the way cattle graze. There is a popular belief that cattle ordinarily graze with the wind in winter and into the wind in summer. This may not be true except in severe weather.

A knowledge of the way cattle graze on range land is essential for the application of range management and other conservation practices. Proper distribution of water and salt can be used as aids in distributing livestock over the range. Watering places too far apart cause cattle to spend too much time on areas where the forage is already short and where their "harvesters" cannot take in enough forage per day. Damage is done to the range as well as to the cow when the area near the water is grazed too hard while areas away from the water are not used enough.

Grazing of overused areas has been lightened on range areas by placing salt so that pastures may be evenly grazed. This is usually accomplished by placing the salt where grazing is needed to relieve over-utilized areas. Salt is placed adjacent to watering places much too often. It is sometimes assumed that cattle must drink soon after licking salt. Consequently, according to this belief, the salt is placed near the water to prevent the cattle from losing flesh by excessive trailing. However, investigations show that such reasoning may be erroneous. The way cattle graze indicates that cattle, like people, may prefer salt with their food instead of with their water. In one study the interval between salt licking and drinking was usually seven hours even though the cattle could easily have walked from water to salt in 20 minutes.

Studies with both Angus and Holstein cattle have shown that the amount of forage grazed depends directly on amount of forage per acre for grazing. For example, where the dry weight of forage available on an acre was 1,000 pounds, a cow grazed about 32 pounds dry weight of forage per day. When there was 500 pounds for grazing on an acre, a cow grazed about 20 pounds per day. And, when the dry weight of forage was 250 pounds per acre, a cow grazed only 10 pounds dry weight per day.

Trap That Rain!

Tricks that help you catch water from big rains and hold it 15 months or more . . .

Condensed from Capper's Farmer

George A. Montgomery and Wallace D. Inman

IF YOU are a winter wheat grower in the plains country your summer's work is cut out for you. It's getting moisture into the ground, where you can hold it until wheat pulls it out to make you a crop in 1954 or later.

Your job is to trap all the rain you can on your fallow and get it down into the subsoil.

If you've started to farm in the last 10 years, you may not realize how much pressure you're under. You have known the lush years, when it was easy to make a crop. It takes know-how, and a lot more skill, to get the job done when rains are less favorably spaced and smaller in total.

In more normal seasons the best yields come from land that has been managed to catch water from all big rains that fall in the 15 months before wheat is sowed.

You should keep four or five inches of topsoil loose and cloddy. It must be ready to grab an inch of rain that pours down in 30 minutes. Only the water you trap does you any good.

And stubble is one of your best helpers. Keep it on top. It will break the force of driving rain drops; keep them from pelting bare ground. Their force melts soil and runs particles together. That plugs spaces through which water can enter the ground. But when big raindrops hit stubble, they are broken up. Part of each drop explodes into misty spray. The rest trickles slowly down stubble shafts to soak into porous soil.

Reprinted by permission from Capper's Farmer
Topeka, Kansas

And don't discount wind. Air in the plains country is dry, ready to take up any moisture it touches. So you need stubble cover to stop air movement on the ground.

Stubble makes shade. That reduces the number of weeds that sprout. And it keeps the soil cool. That's important, for hot soil turns water into vapor, so it can pass off into the atmosphere.

There are a lot of ways to fallow. We have traveled more than 2,400 miles through the big winter wheat belt. We talked to farmers who do a top job of saving moisture. We asked them to tell us how they trap rain to make the following year's crop. We also put the question to experiment station men we visited to get the scientific angle. Here's what they say:

Walter Ardeuser and Son, Kit Carson County, Colorado. We're strong for keeping stubble on top. When first weeds appear, we go in with a sweep type tillage tool made especially for the stubble-mulch fallow. It has five 32 inch sweeps that cut off all weed roots and loosen all top soil on a 13 foot strip. Sweeps have just enough pitch to lift the soil they loosen and break it up into big clods. The finer material sifts down below. Much of the stubble remains upright, and most of it still is anchored by the roots.

That puts soil in condition to catch and hold a big rain. We had five inches in a week on one field thus worked. None got to the water channels. A second tract has a big depression. Heavy rains used to make a lagoon there that covered 15 acres to a depth up to three feet. Our sweep type tool keeps all water out of it.

The rest of the summer, we use a sturdy field cultivator with rod-weeder attachment. It brings clods to the top, shakes dirt out of weed roots, still keeps stubble on top.

There's cover throughout the summer to keep raindrop splash from forming a crust, so we don't have to work ground often.

We plant with a deep furrow drill. It pushes clods aside and gets the seed down to firm, moist soil that gives us good germination. The furrows catch snow, protect the crop from winter killing and wind damage.

Alvin Lowe, agronomist, Garden City (Kansas) Branch Experiment Station. Wheat seeded too early in fall can be as wasteful of moisture as a crop of weeds. At this station, a September 15 seeding, over a 10 year period has outyielded that sowed August 15 an average of 5.6 bushels an acre, or nearly 20 per cent. For some seeding rates the September 15 plantings were about 30 per cent ahead of those made 30 days earlier.

Harold E. Myers, associate director, Kansas Experiment Sta-

tion. We have found that fall growth of wheat, seeded August 15, took all moisture from the top three feet of soil and some from the fourth foot. October 1 seeding removed moisture only from the first foot. That's a difference of five to six inches of rain. And each added inch of water in the soil will make two extra bushels of wheat.

We need broad, flat, level terraces high enough to hold the biggest rain that falls. Fallow operations ought to be on contour between terraces.

A heavy field cultivator with duckfoot shovels is a good tool to use. It leaves stubble sticking out, and makes furrows that will hold water from a big rain.

Homer Gurley, Ochiltree County, Texas. Slopes are gentle on my land. It's so irregular terraces or contour cultivation are out of the question.

I work it with a heavy duty field cultivator and a oneway. The oneway is a good weed killer, but it pulverizes soil a little too much. I lick that defect with a puddler. It's made of big 20 inch disks. I make a pie cut in each disk to remove about a third of it. These disks are mounted two feet apart on an axle. The cutout sections are staggered around the shaft to keep pull uniform.

This puddler, which makes hundreds of water pockets an acre, is hooked behind whatever fallow tool is used, except the last time over. Then ground is smoothed for the drill.

Last fall I had a half section puddled when an inch of rain fell, much of it in 10 minutes. When the shower stopped that field looked like a big lake with clods sticking out. Three days later I hooked a drill behind a field cultivator and seeded.

Jake LeMaster, Ochiltree County, Texas. I grow wheat both here and in Potter County, Texas. I have a tight subsoil in Potter county. In August, 1951, I had 207 acres deep-chiseled. Cost was $2.50 an acre. The other 92 acres in the same tract wasn't chiseled. Wheat was seeded across both treatments.

A 1.37 inch rain fell a week after chiseling. In another week, 2.25 inches came. Grain on chiseled soil outyielded the other seven bushels an acre.

C. H. Diebold, Survey Supervisor, Soil Conservation Service, New Mexico. To break a tillage pan, (1) ground should be chiseled to a depth that cuts through the entire thickness of the pan; (2) lateral spacing of chisels should be two feet or less; (3) enough stubble should be left on top to make a good mulch; (4) chiseling should be done when the pan contains less than half as much moisture as it is capable of holding.

Best time to chisel is after har-

vest when tillage pan is dry. There is no danger then of creating a second pan beneath the first.

On a nine per cent slope in Yuma County, Colorado, chiseling eight inches deep at 12 inch intervals increased moisture uptake of soil 53 per cent compared to onewaying to a depth of four inches.

Bert Anderson, Ford County, Kansas. A rotary subsoiler and an offset disk are two of my best tools. The subsoiler gouges holes 14 inches deep at intervals of 36 inches each way. Long chisel points on a revolving shaft drive straight down as they descend into the ground. Each pries out a big slug of soil as the curved chisel blade comes out of the ground.

I like to have my ground punched full of holes by April 1. That lets water soak down deep. Topsoil is worked shallow. Except in pockets, I get seed down to damp ground where wheat will root readily.

After chiseling, I use an offset disk that leaves the surface full of water pockets.

We got 18 inches of rain in a short time in 1951. None ran off. We had only three inches during the 1952 growing season, but I had one field that made 50 bushels an acre. That wheat was made from 1951 moisture I trapped. Most of the 1952 rain came in showers too light to help much.

H. H. Finnell, Panhandle Substation, Goodwell, Oklahoma. While I was with the Soil Conservation Service, we made studies that showed: (1) Soil with a good stubble cover will store 36 per cent more moisture than bare soil; (2) a four per cent slope takes up less than half as much water as one with slope of less than one per cent; (3) weeds can cut the amount of moisture stored by 44 per cent.

Milk - Feed Ratio Drops

Recent months set a five year low point in the milk-feed ratio, says R. B. Schwart, Ohio State university.

"One hundred pounds of milk would buy only 122 pounds of dairy feed on March 15," Schwart said. This is the lowest March ratio since 1948. The ratio dropped 10.3 per cent from February to March, which is the greatest change during that period for the last several years. Normally, we can expect about a four per cent drop in the ratio from February to March."

Feed prices began to level off in March. Milk prices continued to drop. Feed prices probably will not change much during the next few months, Schwart said. *Ohio State University*

BIG FARM

38,000 acres and 1,200 men produce over four million dollars a year on one of the country's largest farms . . .

Condensed from The Wall Street Journal

Winston C. Fournier

STORE owner, hospital operator, electric utility, landlord and contractor, garbage hauler, researcher—and farmer.

Those are just a few of the many name tags you could put on Delta & Pine Land Co. at Scott, Mississippi. But primarily it's a farm. Its 38,000 acres of rich Delta land extend 11 miles north and south and six miles east from the Mississippi river. It's considered one of the largest row-crop farming operations in the United States.

Owned by Fine Spinners & Doublers, Ltd., a textile company of Manchester, England, the farm company is operated and managed by a board of directors.

The English firm originally got into Mississippi farming when it figured the long, silky fibered Egyptian cotton could be grown in the valley of the Mississippi as successfully as in the valley of the Nile. Fine Spinners & Doublers wanted a larger source of supply.

But that venture wasn't successful; only the short fibered American upland cotton would grow well. Now the operation is kept by Fine Spinners & Doublers simply as an investment.

Hop in a car with production manager Gray for a drive over the 14 plantations and one cattle ranch making up this establishment and you get an idea of its super size. About 1,200 employes are at work. Delta & Pine's 194 tractors are cultivating the fertile fields that have 11,396 acres of cotton, 3,250 acres of corn, 1,000 acres of soybeans, 1,184 acres of oats, 329 acres of alfalfa, 55 acres of wheat and 75 acres of popcorn. Both tractors and airplanes are planting 1,107 acres in rice. Near the Mississippi, 3,000 head of cattle, including a $5,000 prize bull, graze peacefully on 5,000 acres of pasture.

Here in Scott, a town owned by

Reprinted by permission from The Wall Street Journal
Chicago 90, Illinois

the company, you are shown one of the company's three modern cotton gins, its rice dryer and grain elevators. And you can wander through the huge parts department and repair shop where a million dollars worth of farm equipment is kept in running shape, or visit the firm's modern drug store and one of its three general stores where employes may buy anything from a loaf of bread to a television set—at prices very near cost.

Receipts Above Four Million

You can stop off at the general office and chat with genial 38 year old Dr. Sayre, president of this huge operation since 1950. "Last year our gross receipts were between four and five million dollars," he says with pride.

Last year Delta & Pine produced 9,875 bales of cotton and 9,900 tons of cotton seed, its two big revenue producing commodities. The seed probably returned a larger amount of money than the lint; the company sells all its seed for planting purposes rather than for the less lucrative use of crushing into oil and meal.

Under registered trademarks, the company sells over 30 per cent of all cotton planting seed used in the United States, and is the largest single cotton planting seed grower in the world. It has customers in just about every cotton growing country.

Just about all the rice produced is sold as seed, too, and about half the soybeans wind up as certified seed. Small acreages of wheat and oats complete Delta & Pine's seed producing operations.

"Despite our cattle production, the rice we grow and all the other things we do, we're still essentially a cotton farm," asserts Dr. Sayre, who received his bachelor's and master's degrees in agriculture at the University of Illinois and his doctorate in economics at Harvard. "What affects cotton production and use in the world vitally affects our operations."

A Nod to Synthetics

With a nod toward the rising output of synthetic fibres, Dr. Sayre calmly asserts "I can't agree with those who say cotton use won't or can't go up—in spite of synthetics."

But "Jerry" Sayre is realist enough to know cotton growers can't sit back for a minute in the battle with man made fibres. "We have been spending between $75,000 and $100,000 a year on cotton breeding research," he notes, "and that's being increased. The best hope we have in cotton is in research for new and stronger fibres, for more lint production per plant—for a better cotton to do the job."

Operating a farm this size poses special problems, but many facets of its life are only enlargements of

conditions encountered by most farmers.

"We've taken advantage of a lot of new techniques in farming," says Dr. Sayre, "but we haven't gone as far as we want to go in determining farming efficiency."

A striving for more efficiency in land management, labor deployment and machine use is the constant goal of Delta & Pine's production department.

Panel Planning

Take a look at the pine paneled planning room just off manager Gray's office. On the wall hangs a big green "Advance P l a n s Panel." It's divided by white paint into 12 months and each month is subdivided into four weeks. Down the panel's side are listed the six operating departments of the company: Administrative, production, sales, accounts and finances, central services and research.

The panel operates this way: The research department, in February, figures a certain field will need fumigating around April 21. A ticket is made out requesting the production department to do the work and it's hung on a brass hook in the latter department's space for the third week in April. Each w e e k each department checks its tags and knows just what has to be done.

"Our planning for this year's crops started last September," Mr. Gray asserts, "when we started putting in fall and winter crops. We keep our spring plans fluid until late February, depending on how the markets look for our various crops."

For normal, year to year planning Mr. Gray, his two assistant production managers, and the 14 plantation managers take a look at each of the 100 to 160 fields or "cuts" on each plantation and decide what crop is best suited for that "cut" that year. They base their decision on what the land grew the year before, its soil type and other factors.

Just being put into use is a newly completed soils inventory of every inch of Delta & Pine's land. A map was made of each plantation showing all the different soil types and their relation to each other, crops recommended for each soil, direction of the drainage flow, food value of the land, its acidity and everything else needed for efficient land utilization.

Realignment By Soil Type

With this information in hand, Mr. Gray plans to realign his fields or "cuts" to coincide with the different soil types. The cuts now are laid out as they have been for decades when most of the farming was done in 10 and 15 acre patches by tenants.

"The way it was," says Mr. Gray, "one cut might be partly

suitable for cotton and the rest of it not worth a damn as cotton land — but be mighty fine for corn. Now we're going to take advantage of that."

Delta & Pine's entry into rice growing is another example of its forward looking land management program.

"We planted our first rice crop on less than 400 acres in the spring of 1951," Minor Gray reports. "This year's acreage will be a little over 1,100; that's how much we think of it. But the main thing to remember is that rice is on land that never has paid its own way—let alone show us a profit. Now it makes a nice piece of change."

Delta & Pine's increasing cattle operation is still another phase of land management. The "ranch" is along the Mississippi river and the disastrous flood of 1927 deposited tons of sandy silt on the land, making it unsuitable for anything but pasture.

Cattle Buildup

The company got into cattle production in 1939, selling each year's calves at weaning time for someone else to fatten. But in 1950 D. & P. started holding back calves and finishing them for market. Ray H. Means, assistant production manager in charge of livestock, says he plans to keep increasing his brood herd to somewhere between 2,000 and 2,500 cows. When that point is reached, the farm's cattle population will be 6,000 head, and around 1,800 finished steers and cows will be marketed each year.

"We're able to sell a lot of feed and forage through these cattle that otherwise would have no value," Mr. Means remarks.

"All the farm units have land unsuitable for crops, and we're moving cattle onto those areas as we get enough of the land together to make a profitable pasture," he adds. "Lots of this land isn't profitable, ready, for row crops, though that's what it has grown for years."

Mr. Means and Mr. Gray also are looking toward using small grains—wheat or barley—as cattle fattening feed. "Those grains we could plant in the fall after cotton harvest — when our labor doesn't have anything else to do. Then we could take advantage of our fall rains to get a good crop started and we could harvest it in the spring when our combines are sitting idle waiting for the rice harvest."

Two Crops a Year

Delta & Pine's folks are looking also more and more for the land to grow two crops a year instead of the traditional one. This spring they plan on putting 225 acres of corn on land that grew oats for pasture use early in the spring. On another 165 acres, after oats

are combined off, fescue and clover will be planted for cattle pasture.

"Last fall we tried a little experiment with spinach," B. M. Nunnery, assistant production manager for row crops, pointed out. "We put 300 acres in on ground we planned to let lie fallow this year. The winter was mild and it turned out good. We made a mighty nice profit on that little operation."

Dr. Sayre adds another significant point about the spinach deal. "Even if we only broke even it would have been worthwhile. Our tenants had nothing else to do, so harvesting the spinach provided them with extra pocket money."

Mr. Gray's staff includes a full time civil engineer who looks after such problems as drainage ditches, fences and leveling land for rice planting. A full time entomologist supervises the farm's spraying program to control insects. And a secretary handles the voluminous paper work and records the department maintains.

To run a farm operation of this magnitude, Mr. Gray's department has at its command, besides the farm tractors, 58 cars and trucks, 30 cotton pickers, seven grain combines, five crawler type tractors for bulldozer work, two self-propelled road graders, three self-propelled corn pickers and uncounted batteries of plows, discs, harrows, ammonia applicators, insect spraying equipment and other small items.

More and More Mechanization

"In 1931 we had 1,200 mules on the place to do our work," Mr. Gray recalls. "But in that year we put 3,000 acres in tractor cotton—the first time we ever used 'em. But it wasn't until 1938 that we really started to mechanize in a big way. Since then each year has seen us go more and more to mechanical farming."

Now Delta & Pine has only 70 mules on the whole operation; they're kept around for the tenants to use in hauling wood, plowing their garden patches and minor things like that.

"Back there when we had 1,200 mules," Mr. Gray continues, "it took all our land not planted to cotton just to grow enough feed to maintain the mules. Now we can grow more food and fibre for people."

Though the Delta & Pine organization is firmly convinced mechanization is the answer to increased efficiency and lower cost production, "it still poses a big problem in the matter of training the Negro workers," Mr. Gray acknowledges. "They have never had much experience with machines and some of them have lacked pride in their work."

"That's one reason we recently set up our own paint shop with plans to paint the equipment

about every year," Dr. Sayre adds. "A freshly painted tractor that looks nice will get much more care than one that's dull and scarred."

Plantation Service Center

This need for tractor maintenance has given rise to the service center. At the headquarters of each of the 14 plantations a building has been built large enough to park all the tractors assigned to that plantation—usually about 14. Each driver has his personal tractor. When he comes from the field at night it's his responsibility to check the fuel and water supply of his machine and add any that's needed. Then a night service man at each center checks each tractor nightly. He does any minor mechanical repairing needed. If he finds major overhauling is in order, that tractor goes to the central repair shop here at Scott for the work.

"So far this system has been working excellently," Dr. Sayre reports, "and it causes us fewer headaches. After all, you can train one man to do the checking and keep records on each tractor where you couldn't train 14."

Across the street from the repair center is Delta & Pine's "factory" center with its $175,000 cotton gin. Along with the gin is a delinting plant to take the last bit of fuzz from the cotton seed sold for planting.

Next door are a rice dryer and cleaner, complete with 24,000 bushels of storage capacity, a feed mill and a 48,000 bushel grain elevator. And a few miles away, down near the river, D. & P. operates its own fencepost factory where last year 9,000 posts were cut and treated. "With those posts we put in 25 miles of permanent fencing," Mr. Deavenport adds.

The central services department maintains a small airport on the farm property. It's used heavily for a couple of months each spring when airplanes plant part of the rice acreage and spray and dust with insecticides most other crops the farm plants.

"We don't own our planes, though," Mr. Deavenport says. "Even with our size we don't have enough work to pay for that."

Delta & Pine's research department, headed by Dr. Ewing, has proved a boon to the company. Known throughout the world of plant breeders, Dr. Ewing, who's been on the project 35 years, developed the famed Deltapine 15 cotton that's now planted on nearly a third of all cotton acreage in the United States. Two years ago he brought out commercially D. & P. L. Fox, a newer variety that matures earlier, has fewer leaves and defoliates easily —all qualities needed for machine harvesting. It is rapidly catching on as a variety where those characteristics are needed.

Progress Report on
SELF-FEEDING SILOS

Labor saving silos have fed 30 steers grass silage for 51 days with only five hours of manual labor . . .

Condensed from New Jersey Farm and Garden

Samuel H. Reck, Jr.

HENRY FORD'S first auto was a far cry from his 1953 model, but it ran and paved the way for the improvements which followed in rapid succession.

The first self-feeder silos were about like Henry Ford's first "Tin Lizzie." Now, some improved models are coming off the agricultural engineers' drafting boards. They're much better than the first ones, but still far from what we'll have in, say, 1975. However, they are well worth examining in these days when efficient use of labor may be the key to survival of a farm enterprise.

For several years the State Experiment Station at Rutgers university has been testing various types of upright self-feeders at Fiddlers Creek Farm, Titusville, Pennsylvania. The work has been financed by a grant from the farm's owner, Paul M. Mazur. The farm manager, Robert Barnhart, has been closely associated with all phases of the research.

After considerable trial and error, the Fiddlers Creek project has come up with some basic design principles that seem to point the way to future success with silos that can self-feed not only corn silage, but also grass silage, which is far more difficult.

One silo of special interest was christened the "Tower-on-the-Square." According to Mark E. Singley, Rutgers engineer who worked on the project, this silo fed 30 steers for 51 days on grass silage last winter with only five hours of manual labor required to operate it.

The structure is a Craine triple-wall wood stave silo, 12 feet in diameter and 30 feet high, erected on a square concrete block foundation. Opposite sides of the square are left open for feeding areas. These openings are 12 feet

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Sea Isle City, New Jersey

wide, five feet high.

An A-frame in the square divides the silage as it comes down and forces it out where the animals can reach it. This A-frame is built out of a special plywood impregnated on the top surface with a plastic which makes it slippery, facilitating the flow of silage over it. The top edge of the A-frame is sheathed with steel.

When the silo is being filled, the feeding openings are closed with plywood panels. As the filling progresses, a partition is pulled upward by a winch. This partition is made of three quarter inch plywood, 12 feet wide and 6 feet high. When the filling is complete, the partition is at the top, leaving a slit in the silage from top to bottom of the silo over the A-frame. The silage "splits" over the A-frame as it falls.

One problem with all self-feeder upright silos is to devise some means of controlling the flow of the silage. In the "Tower-on-the-Square" this is done with a set of 10 pins on each side. These pins are 18 inches long and two and a half inches in diameter. When the silage comes down too fast, its flow can be slowed up by driving in the pins.

In last year's tests, Singley found that the silage had a tendency to push the pins back out. To correct this, he intends to use steel pins, threaded, which can be turned in or out with a wrench.

During recent weeks Singley has been busy designing a 14x40 foot silo incorporating the same basic features. This probably will be erected at Fiddlers Creek Farm to determine whether the "Tower-on-the-Square" principle will work with structures larger than the 12x30 foot one now in use.

Feeding areas on the new silo will be on the east and west sides. The original silo has feeding areas on the north and south, but the steers showed a marked preference for the south side on cold winter days. This caused the silage to feed down faster on that side and resulted in some spoilage at the end of the feeding period. With the east-west arrangement, the cattle are expected to patronize the east side in the morning and the west in the afternoon.

A self-feeder silo constructed of steel coated inside and out with fused glass also is being tested at Fiddlers Creek Farm. This silo is mounted on steel columns which provide feeding space around a complete circle. Silage falls downward onto a cone which moves it out where the animals can reach it. To control the flow of the silage, 20 individually operated hinged flaps made of steel were installed inside the silo at the bottom of the skirt. Externally operated screws are used to force the flaps in against the silage mass. when desired.

This silo was filled with 92 tons of grass silage and preservative. During filling, the silage mass was divided into quarters by four plywood partitions similar to the "slit" method described earlier. This partition, too, was drawn upward as the silo filling went in. The result was like a very deep pie cut into four pieces.

This silo fed 30 steers for 76 days with 19 man hours of labor required to manipulate the silo. Much of this labor was consumed in operating the steel flaps to control the silage flow. The principal disadvantage of this silo is its great initial cost.

Rutgers university, in co-operation with silo manufacturers, has also developed a self-feeder silo based in part on a design worked out by D. W. Ruedemann of Plainsboro, New Jersey. Mr. Ruedemann, who reports that his silos are about 80 per cent efficient in the self-feeding of grass silage, has constructed 11 radial walls of concrete in the bottoms of his silos. Silage builds up on these walls; when it packs so hard the cattle can't eat it, chain saws are used to cut it loose two or three times a week.

The Rutgers - Ruedemann silo has six radial beams installed in the base of the silo to support the silage mass above the feeding area. The beams are supported in the center by a cone. Charles H. Reed, Rutgers agricultural engineer who worked on this design, explains its operations as follows:

"When the silage compacts on the beams, the end of one of them is lowered. This relieves the pressure so that the cattle can eat the silage off the beam, after which the beam is raised." Twenty-three cows were fed for over four months with almost no manual labor for handling silage.

* * *

Antibiotics in the ration have increased pigs' gains by 10 to 12 per cent, says a University of Illinois livestock specialist.

* * *

Reed adds a warning. Says he: "These self - feeder silos can be very dangerous unless properly designed and constructed. They should be operated only by a person who has received detailed instructions."

P. D. VanMater is adapting a silo to self-feeding by installing a cone in its base to divide the silage and push it to the circumference, where the cattle can get it. Flow of the silage will be controlled two ways—by a series of fixed baffles and by pins similar to those in the "Tower - on - the - Square" silo.

Mr. VanMater plans to operate his self-feeder silo continuously during the summer. As the cattle eat it out at the bottom it will be filled at the top with freshly cut forage. In this method of feeding, pasture is cut and brought to the cows.

The Fallen Forests of Scotland

An Englishman reports on what the Big Wind did to age-old forests and how they hope to clean up "the mess." We agree that "Even to anyone who does not know a Scots pine from a row of beans, it is interesting."

Condensed from The Listener

Alastair Borthwick

I HAVE been up to the northeast of Scotland, inland from Aberdeen, to see something which in any normal times you would have seen on the front page of every newspaper in the country. I went there because I did happen to see a newspaper, a local newspaper, with a very big photograph in it. It was an extraordinary photograph. It had been taken from the air, and it showed a square mile of forest. Nearly every tree in that forest was flat. It looked exactly like a field of corn beaten down by the wind and the rain. Down there, in that one photograph, there must have been something like 200,000 ruined trees. But, of course, most of you did not see that photograph because too many other things were happening that day. The *Princess Victoria* was going down in the Irish Sea, and then came the floods, and few people outside Aberdeenshire and practically no one outside Scotland had any time to be bothered about trees. But it was a major disaster, and it is a big story, and even to anyone, who does not know a Scots pine from a row of beans I think it is interesting. What does it all amount to, and how are they going to clear up the mess?

But first let me tell you how serious a mess it is. Up in that northeast corner, between Aberdeen and Inverness, there are five million trees down. The damage is local, but the effect is national. That gale on January 31, which apparently caused only local damage to trees, in fact cost Scotland more than one-tenth of all its mature softwood reserves. It is impossible for anyone to picture the mess. No one can think in millions. But I would like to

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describe to you one little bit of the mess, one medium sized estate that I visited. The place is not so very big — two or three miles each way and quite a lot of that unplanted anyway — but in that one space there are 100,000 trees down. Even that is difficult to appreciate, so let me put it this way: Suppose you went into a fair sized room in a house, and then took 2,000 boxes of matches, and scattered their contents over the floor—not 2,000 matches, but 2,000 boxes, with 50 apiece in them — that would be equivalent to that one estate, a tiny part of the total disaster.

I have seen nothing like it since the bombing of Hamburg in 1945. There are places where there is a solid carpet, as far as you can see, of interlocked trunks and branches, a carpet as much as 20 feet thick. I saw a 50 acre wood —one of the finest in Scotland— with just 11 undamaged trees standing in it. There had been 25,000. They were smashed and cracked, heaved over, interlaced, crushed. Seventy years of labor and care, gone in just two hours.

The estate factor showed it to me. He said he had been out at the height of the gale, trying to discover how the trees were taking it. He said he could not stand up —no one knows how much over 100 miles an hour it was blowing —and he also said he could not breathe. He struggled along in the shelter of a ditch, and even in there he had to turn his back to the wind every few paces to draw breath. He saw the trees. These big chaps have most of their branches at the top, you know. They are top heavy. They were rocking back and forward in the gale, and then the roots of the nearest ones began to give, and then over they went, quite slowly. And as they fell, it was like watching a row of dominoes go down in slow motion. The first trees hit the second row, which hit the third, which hit the fourth. They all went down, four or five deep, exposing a new section. And then the rocking began all over again. He said: "It was like yon tornadoes you see in the films. You couldn't hear yourself think. And all the time there was a terrible cracking noise — trees that didn't fall slow in one piece, but cracking off clean halfway up. There was no slow motion about them. The tops just came flying through the air, and most of them weighed tons. There has never been anything else like yon in my lifetime." When he said that, he was being strictly accurate. On the estate of Moneymusk they have kept records for 240 years, but there has never been anything like this. However, I do not want to labor it. The figures tell their own story. Around Deeside today there is the biggest tangle of timber that there ever has been

in the recorded history of Scotland.

What has to be done with it? That is not easy. This disaster has set off a whole series of difficulties, most of them not very obvious ones. But basically the problem is this. Most of the timber is softwood, and quite a lot of it is Scots pine. If you leave Scots pine lying about for six months or so, a mould attacks it, and it turns blue. And if you leave any softwood lying about — and five million of them are lying about just now — you provide a very happy hunting ground for two pests: The pine weevil, which lays its eggs under the bark and then the grubs start tunnelling, and the pine-shoot beetle.

Dangers of the Beetle and the Weevil

The beetle and the weevil are serious matters. They are always with us, but in the normal way of things they are under control and do not do a great deal of damage. In a well kept forest they do not get much of a chance. But the fear is that this mess the gale has left will be such a wonderful breeding ground for them, that by the time it is cleared the beetle and the weevil will be rampant, so strong and so numerous that they will start to attack healthy trees and new plantations near by. In other words, these wind blown trees may breed up a plague. So the first point I want to make is that clearing up the mess is going to be a race against time, a race between every forester the country can scrape up, the blue fungus which will soon be spoiling the value of the timber, the weevil and the beetle. The second point is that at the very best this race will end in no more than a dead heat. The foresters cannot win outright. Six months is the deadline, or perhaps nine months at the very most. Even if it were possible to shift five million trees in that time the cost of working at that speed would be out of all proportion to the value of the timber. Work too quickly, wages mount, much extra equipment has to be bought, and money is lost. Work too slowly, the timber spoils, and money is lost. So the present plan is based on a compromise: The aim is to clear the trees in two years. If all hands turn out, it can be done economically in that time, and the timber should not have lost too much of its value. Even so it will take perhaps 3,000 men to do it, and at least 1,000 of them will have to be brought from other parts of Scotland.

And the cost? No one can assess accurately just how great the value of these trees is, but before they blew down they were probably worth between — taking very wide limits — four and six million pounds. They are not

worth that now. It is much more expensive to clear a tangle than it is to walk into a forest and take your trees one at a time, and on top of that many of the trees are damaged. What the present value of the trees is we shall not know until the owners and the timber merchants agree on a price, but, making a wild guess, I would say the loss has probably been about one million pounds.

It is at this stage that some of the most unlikely points begin to crop up in the story. Consider this. Young trees — say 25 year olds and downward — bend with the wind and do not blow down. The Forestry Commission has hardly anything older than that. Therefore the whole of this loss has fallen on the owners of the big private estates, or very nearly the whole of it. You need money to keep a forest going. And the money side of forestry is a very queer business. In the first place, there is no question of the insurance companies paying up. These forests were not insured. That million pounds has, quite literally, gone down the wind for good. You would have to insure a tree for 70 years or more to be safe, and it would cost too much. So wherever the money comes from to replant these devastated forests, it will not come from insurance. But, you may say, the owners will still get a very handsome check from the timber merchants. Those blown trees are still worth something. They may have dropped a good deal of their value, but they are still worth several millions. And there comes the snag: If there is one thing a forest owner hates, it is money in the bank. It arises in this way. For some reason, forests do not count as capital in the same way as other property when it comes to assessing death duties. Suppose a man dies worth 200,000 pounds, and half of that is tucked away in trees. His estate is valued at only 100,000 pounds, and death duty is fixed accordingly. The value of the trees is assessed separately, and no payment is made until they are cut. There are other complications I cannot go into now, but in many cases it means that all his heirs have to do to pay the duty is go out and cut some trees. It is not quite as simple as that, but that, broadly, is how it works.

So you see how it must be now on some of those big estates in the northeast. The trees are down, and they must be cleared quickly. They will be paid for, the money will go to swell the dutiable value of the estates, and one of these days the treasury will demand most of it. The trees, instead of footing the bill, h a v e simply helped to make the bill bigger. Naturally, I do not know the financial condition of the landed gentry of the northeast, but it

could make a difference to the replanting programme.

There are other complications, too. Rabbits, for instance. Rabbits are the g r e a t e s t enemies young trees have, so much so, in fact, that you just cannot have forests and rabbits together. The usual procedure is to build a wire netting fence round ground which is going to be planted, kill the rabbits inside the wire, and then go ahead. But have you ever seen a blown tree? The whole root system tilts up in one piece, like a great solid plate of earth set on end. That is a wonderful place for rabbits to hide and burrow in. And in the northeast I saw many places where that had happened 500 times to the acre. Several foresters told me they did not know how they were going to get the rabbits out when the mess had been cleared and the ground was ready for replanting. That may seem a small thing to you, but in S c o t l a n d rabbits are already doubling the cost of planting new ground.

There are all sorts of other snags: For example, if the wind has suddenly t a k e n about 30 years' worth of trees in a couple of hours, there is going to be a gap of 30 years in that district when there will be no trees to fell, and that is not good forestry. There is the difficulty of moving sawmills in from other parts of the country, and finding the extra 1,000 skilled men, and (possibly most difficult of all) finding the houses for them to live in. There is the difficulty of knowing where to start.

Meantime, the Forestry Commission, the owners, and the timber merchants are getting together and trying to agree on a fair price, and that is not going to be simple. There is much good will on all sides, but there always is the danger that human nature will step in and start where the gale left off. After all, the merchants may think they have the owners exactly where they want them. The owners *must* get that timber lifted quickly, and the merchants are the only people who can do it for them. If they put on the screws too tight they could cripple private forestry in the northeast for a long time to come. That is why a joint committee of all concerned has been formed, to thrash out all the difficulties and arrive at a fair price. That is why no licenses to fell timber anywhere else in Scotland will be granted until the mess has been cleared: We will live on the mess, and use all our skilled labor on the mess, until none of it remains.

But it is not going to be easy. Blue mould comes on fast in the summer. The weevil and the beetle are house hunting. Beside them the other difficulties are insignificant.

Breeding to produce rams that sell

Make Sheep Raising Profitable

Condensed from Successful Farming

Delmer Groves

UNLESS you have a market for the breeding stock you produce, you miss one of the premiums of good livestock.

Farrell Shultz and Arthur Jewell, Ohio sheep breeders, solve this problem by building their own markets. Not satisfied with merely producing purebred stock for sale, they produce special kinds of purebred livestock and then couple good salesmanship with that practice. Selling is just as important with them as breeding, but would be worth nothing without the good breeding programs they follow.

First, let's see how Farrell Shultz sells the purebred Shropshires he breeds on his Logan county farm. They're sold under a brand name! Breeding rams are divided into three classes and sold as Flockmaster, Shultz and Commercial.

Only about 20 per cent of the rams are sold in the top classification of "Flockmaster." Out of top producing ewes, they must be backed by a pedigree of outstanding individuals. Flockmasters must be of top-notch type — the kind that would be valuable in the best purebred flocks.

More than that, Shultz says: "Flockmasters must produce lambs of satisfactory type or the rams will be replaced."

About five per cent of the rams fall into the next classification of "Shultz." These lack being top rams by some minor point but are good enough to go into a small purebred flock that is breeding up.

Most important to Shultz is his third grade of "Commercial," into which about half of his rams fall. Why does he consider it most important?

"I think that as purebred breeders we fall down when we don't aim our breeding program at the commercial sheepman. After all, the end of any purebred livestock enterprise must finally be the butcher's block. I am try-

Reprinted by permission from Successful Farming
Des Moines, Iowa

ing to breed a sheep that will fit the needs of the commercial man. We may not get as much per head, but it's where the bulk of the sales are — I'd hate to part with this end of my business."

With 20 per cent sold as Flockmaster, 5 per cent as Shultz and 50 per cent as Commercial, a fourth of the rams are unaccounted for. Where do they go? The answer is logical; they go to market as meat animals. Shultz finds profit in this, too, partly because he sells them through a lamb pool or graded market.

"Although you are known as a good breeder, you still have to win the confidence of the buyer when he arrives at the farm. The poor points as well as the good must be explained in showing an animal to the prospect. Never try to sell a customer an animal that won't improve his flock," advises Shultz.

It's important "to make your word good, regardless of cost." Customers are almost sure to come back again if they find that a breeder's word is always good. Just as important as having animals that customers want to buy is having a neat and attractive farmstead. Your place should look as if the animals are making money for you.

Shultz has found that animals in good flesh sell better. Most buyers will say they don't want a fat sheep, but they usually end up buying one, because it looks so good. So it's wise to have the animal ready to sell when it's time to sell. The advantage of holding a public sale at the farm is that the sale animals can all be "pointed for it" at the same time.

Another sound idea practiced by Shultz is holding a public auction one year and exhibiting in the complete show circuit on the alternate year.

Keep the flock free from disease and parasites. Shultz believes it's not good business to sell a sheep for breeding that looks like a cull, no matter how good his ancestors were. His final advice: "Dont forget that the butcher's block is the final measure in the meat industry. D e v e l o p your breed with that in mind."

A brand name is used also by Arthur Jewell of Knox County, Ohio. He has developed a special strain of fine wool sheep and sells them as "Jewellaines." As implied, the name is a combination of the owner's name and the Delaine Merino which has been a product on the 350 acre farm since it was cleared in 1930.

Changes in the wool market and improvement in the lamb market were the basic reasons for the development of Jewellaines. In 1945 Jewell obtained a ram from the Andrew Little flock in Idaho. He was one-fourth regular Delaine and three-fourths Western whiteface, which is a

Lincoln - Rambouillet cross. The ram was mated with a band of 40 of Jewell's most vigorous Delaine ewes.

This was the start of the new strain. The ewe lambs were kept and bred to the same type of ram the next year. The next ram used was one of Jewell's own big Merinos (a flock of the original purebred Delaines is still kept intact). Then came a Rambouillet and next a Columbia.

By then he had hit upon the type he wanted. So he started breeding back to rams out of the new strain to fix the new type. The wrinkles had smoothed out, the size was up for high birth weights and fast gaining lambs, and they sheared heavy fleeces—an average of 12 pounds.

Moreover, 75-89 per cent of the clip would go as Delaine wool. In fact, a wool buyer now pays him a 10 cent premium for Jewellaine wool. It has longer staple but not quite as much crimp. There's not a lot of difference in fineness. The sheep have open faces—no haircuts needed. Ewes weigh about 150 pounds and rams 250. The ram shears from 20 to 25 pounds of wool.

Jewell says his Jewellaine ewes lamb easier and the lambs are stronger than ordinary Delaines. However, Jewell still uses lamb brooders. With Jewellaines you can expect a lamb crop of from 125 to 150 per cent, while Delaines do well to make a 100 per cent lamb crop. A third bigger than Delaines, the Jewellaine lambs can be sold grass fat off pasture.

In developing the new strain, Jewell paid particular attention to milking qualities and vigor of the ewes. Until lambing time the flock runs in the open with access to hay silage but no grain. From then on they get about a bushel of grain per head during late winter. The important thing is to keep them free of disease and parasites. High quality summer pastures, rotated often, start the flock of sheep into the winter carrying good flesh.

There's a good market for the new strain. In fact, Jewell finds it hard to produce enough good animals to meet the demand. The western stockman is interested in improving the fleece. Jewellaine rams will do this for him. Many Ohio sheepmen want ewes of good size with high lambing ability while still shearing a good fleece. Jewellaines fill the bill, and when crossed to Columbia or Suffolk rams, they produce a bumper lamb crop. This practice fits the needs of the commercial producer.

About five out of the bunch of 50 rams kept for breeders are usually top animals and will bring a good premium. These Jewell sells at from $300 to $500. Another group of rams sell at lower

prices under $100 apiece—but are good enough to head flocks for small farmers and ranchers.

Jewell likes to sell a few of the rams with the privilege of buying them back, for he may need them in his breeding program. The poorer animals (about 40 per cent) are sold for meat, and the packer cannot resell them for anything else.

All of Jewell's sales are based on a "gentleman's agreement" of satisfaction. He estimates that 95 per cent of his customers have come back for repeat purchases after buying once.

From 300 to 350 sheep are kept on the farm. About two-thirds of them are Jewellaines; the remainder are Delaines. Jewellaines are shipped all over the United States, even to foreign countries. Most sales are made by private treaty.

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Meat production so far this year has been about the same as in the corresponding period in 1952. Increased output of beef and veal has been offset by a sharp drop in pork production.

New Soybean Variety Released

Clark, a new soybean variety, has been released by the U.S.D.A. and midwest agricultural experiment stations.

It will be grown on about 3,000 acres this year and should be available for general use by 1955, according to J. L. Cartter of the Urbana regional soybean laboratory.

Cartter says Clark is adapted to the southern area of the Lincoln belt and to much of the area of the Wabash belt. This includes central to southern Illinois and Indiana.

Clark has averaged about five bushels more to the acre than Wabash or Chief, even though it is slightly earlier than these varieties. It has also outyielded Perry, even though it is a full week earlier. Clark was tested in 120 plots from Nebraska to Delaware.

Clark averaged 41.9 bushels in two years' test in the southern part of the area in which it is adapted, compared with 35 for Chief, 35.3 for Wabash and 38.2 for Perry. In oil content it averaged 21.8 per cent compared with 20.3 for Chief, 21.3 for Wabash and 21.7 for Perry.

The averages ran just a little lower in the northern area of the Clark belt. Clark is resistant to frog-eye leaf spot, one of the major soybean diseases in some Corn Belt localities. It is the 11th in a series of new varieties developed during the past 12 years. Work began on it in 1941. *University of Illinois*

Control Those Flies

Latest information about methods and materials to control troublesome flies

Condensed from Pennsylvania Farmer

J. O. Pepper

SEVERAL different kinds of troublesome flies are found on farms. It is necessary to know a few of the habits of these flies, in order to better understand control suggestions.

House Fly

This fly does not bite either man or animals but can be annoying. And it is a carrier of several important diseases and parasites of both. It breeds in various excrement and filth, and feeds on the same material to a large extent. In this way it carries many germs on its hairy legs and feet. Also, germs may live for some time in the digestive tract of the house fly and may be dropped on food or utensils in its excrement or in the material discharged from its mouth. Several generations of the fly are born during the summer. Their potential reproductive capacity is tremendous. The house fly should be controlled because it is a disease carrier.

Stable Fly

The stable fly is sometimes called wild fly, straw fly or biting house fly. It is often confused with the house fly, but it has a bayonetlike proboscis with which it pierces the skin or bites. Both male and female are blood sucking. They are bad pests of domestic animals, particularly cattle. They annoy the animals continuously; weaken them by sucking their blood, and may act as bearers of certain diseases. Their favorite breeding place is in the edges of straw stacks, but they may breed in other plant decaying materials. A mixture of straw and horse manure is an ideal breeding place. This fly may be found around the barn and also in the field.

Horn Fly

The horn fly resembles the house fly, but is of slightly more slender form and is about half as large. Its beak resembles that of

Reprinted by permission from Pennsylvania Farmer
Pittsburgh, Pennsylvania

the stable fly. Horn flies have the habit of congregating about the ears of cattle, the bases of the horns, the flanks, withers, and elsewhere, large numbers often being found close together. Their biting and blood sucking cause cattle much annoyance and loss in growth and milk production. This fly breeds in fresh cattle droppings; therefore, it occurs around the barn and over an entire pasture area. Several generations of these flies appear during the summer. The horn fly may remain on cattle day and night, making it an important cattle pest.

Horseflies

Several species of this family of flies attack farm animals. The flies are commonly known under such names as horseflies, gadflies and deer flies. The females puncture the skin of dairy cows and other animals and drink blood. They must have blood in order to lay eggs and reproduce themselves. A few of these large flies can draw a lot of blood from an animal. This loss of blood greatly reduces growth and milk production. Horseflies breed mostly along water courses or in localities where water remains upon the land more or less permanently. One species in New York is said to breed in pasture sod. There are one or two generations of these flies during the summer, depending on the species.

Control Methods

The control of flies in and around the dairy barn involves several things:

Sanitation — During summer and fall months keep stables clean by hauling the manure away from the barn and spreading it on fields twice a week. If you cannot haul the manure out every week, dissolve one-eighth of a pound (two ounces) of borax in three gallons of water and sprinkle the surface with this mixture every three or four days. Do not soak the surface, or you may get too much borax on your field when the manure is spread. Such treatment of manure with borax will prevent fly breeding.

If any garbage cans are kept in the neighborhood of the barn, they should be cleaned thoroughly twice a week during the summer and fall. Boiling water may be used to do the cleaning.

Any fermenting farm wastes should be destroyed twice a week. The destruction of the above mentioned house fly breeding places are of great importance in control.

Screening—Regular fly screen wire material should be used on all windows and doors of dairy barns and milk houses.

Chemicals—Any of three different mixtures are accepted by the Pure Food and Drug Administration of the United States De-

YOUR FRIENDS AND NEIGHBORS WILL ENJOY IT

nt of Agriculture for use in nd milk houses.

Methoxychlor 50 per cent ble powder. Use 35 s in 100 gallons of water.

Lindane. Use six quarts of r cent emulsion or 10 s of 25 per cent wettable r in 100 gallons of water.

A combination of meth- or and lindane may be as follows: Four pounds per cent lindane wettable r plus 25 pounds of 50 nt methoxychlor wettable r in 100 gallons of water.

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e Sprays and Aerosols — zed pyrethrum is available h spraying and in aerosols). The use of such ma- in a dairy barn will kill it it comes in contact with, y little residue is left and ot be depended on to kill its residual action.

Poison Baits—The use of poison baits for fly control is not new and their use can be of much help when residual sprays fail to give results.

a. Formaldehyde—The Old Timer—This is a fairly safe poison to handle. Mix one tablespoon of 40 per cent formaldehyde in one pint of water and one pint of milk. Place the mixture out in pans wherever flies tend to gather.

b. TEPP (Tetraethyl pyprophosphate) — This is a deadly poison and the concentrate form or bait mixture should not be allowed to come in contact with the bare skin. A medicine dropper one-half to three-fourths full (one-fourth standard teaspoonful) of 40 per cent concentrate TEPP mixed with one-fourth pint of syrup or molasses in a gallon of water makes the bait. Use it in a sprinkling can and sprinkle it on the floors or other places where flies gather during the day. Sprinkling it on burlap bags, placed on the floor, seems to make an attractive bait. It should be applied in the morning after the barn floor has been cleaned.

Do not contaminate feed or water with this bait and, under no circumstances, put it on cattle.

All utensils used in the treatment should be isolated to pre-

the stable fly. Horn flies have the habit of congregating about the ears of cattle, the bases of the horns, the flanks, withers, and elsewhere, large numbers often being found close together. Their biting and blood sucking cause cattle much annoyance and loss in growth and milk production. This fly breeds in fresh cattle droppings; therefore, it occurs around the barn and over an entire pasture area. Several generations of these flies appear during the summer. The horn fly may remain on cattle day and night, making it an important cattle pest.

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3 NEW SUBSCRIPTIONS FOR $1.50

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a. Methoxychlor 50 per cent wettable powder. Use 35 pounds in 100 gallons of water.

b. Lindane. Use six quarts of 20 per cent emulsion or 10 pounds of 25 per cent wettable powder in 100 gallons of water.

c. A combination of methoxychlor and lindane may be used as follows: Four pounds of 25 per cent lindane wettable powder plus 25 pounds of 50 per cent methoxychlor wettable powder in 100 gallons of water.

Method of Application

Before spraying any building, sweep dust, dirt and spider webs off the ceilings and walls. All feed, salt licks, water cups and feed mangers should be covered with burlap bags or paper.

The ceilings and walls should be thoroughly wetted with any of the above sprays. The usual rate of application is about one gallon of spray to each 400 square feet of area. It will take two or three applications during the fly season for control.

Space Sprays and Aerosols — Synergized pyrethrum is available for both spraying and in aerosols (bombs). The use of such materials in a dairy barn will kill flies that it comes in contact with, but very little residue is left and it cannot be depended on to kill flies by its residual action.

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a. Formaldehyde—The Old Timer—This is a fairly safe poison to handle. Mix one tablespoon of 40 per cent formaldehyde in one pint of water and one pint of milk. Place the mixture out in pans wherever flies tend to gather.

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Do not contaminate feed or water with this bait and, under no circumstances, put it on cattle.

All utensils used in the treatment should be isolated to pre-

vent possible contamination of milking equipment.

TEPP poisoning can occur by swallowing, breathing, or skin absorption; therefore, the material should be handled with the greatest of care. Application should be made each morning until the fly population has been brought under control, when it can be used every two or three days as needed.

A commercial lindane and TEPP bait is now available and has been registered with the Pure Food and Drug Administration of the United States Department of Agriculture. The directions on the container should be followed as to amounts and methods of application.

Precautions for Poison Baits of Any Kind — When you put out any kind of poison bait, make sure that children and livestock cannot get to it, and do not allow it to contaminate feed or water supply.

Fly Control on Cattle

The blood sucking flies attack cattle during the day when they are in the pasture. Therefore, it is necessary to treat the animal with some material that will repel or kill the flies when they make their attack. The ideal material would be one that would be effective for several days after treatment and easy to apply.

The older cattle sprays are composed of pyrethrum and oil and are effective for about one day. The oil in these sprays, when used daily over a long period of time, may reduce milk production. There are now on the market synergized pyrethrum materials that do not cause such a reduction. These materials at first appear to be much more expensive but, when diluted for spraying, the expense is little more than the older type sprays. Daily applications are necessary for best control. This spray also appears to be fairly effective against the large horseflies.

A residual spray that is quite commonly used on cattle is eight pounds of 50 per cent methoxychlor wettable powder in 100 gallons of water. This material has given protection against flies for a period of three to seven days. The material does not appear to be as effective against some flies as the newer pyrethrums.

Automatic Sprayer

The automatic treadle sprayer is briefly a small platform so made that when the animal steps on it, the pressure of its weight starts a simple pump. This sends forth a measured amount of the insecticide on the animal. There may be one to three nozzles on the setup. Generally, there are two. One is located about belly height

and the other over the back. A concentrated synergized pyrethrum is used. It has given excellent control of the blood sucking flies on cattle. The sprayer is built in a chutelike crate in a place where the animals must pass through as they go to pasture in the morning and they pass through it again as they come into the barn in late afternoon. The spray chute is covered with something like burlap, in order to keep the spray swirling around the animal and give good coverage. According to reports, one gallon of the concentrate pyrethrum material should treat a herd of 25 cattle, each being sprayed twice a day with one nozzle over the back, for a period of about 72 days.

Some manufacturers make these sprayers with all parts ready to assemble. Others only make the pumps and working parts and the farmer must construct the treadle and chute.

New Ladino Variety

Pilgrim, an improved variety of Ladino clover, was released for seed increase and farm use at a recent meeting of the Eastern Alfalfa Improvement Conference. The variety, formerly designated as F.C. 23608, has been found particularly suited to Pennsylvania growing conditions, and seed will be available in limited quantities next spring, the agronomists announced.

Crop Size Determines Hay or Silage Cost

Making grass silage is both the cheapest and the most expensive way to harvest forage, depending on volume.

J. E. Wills and R. E. Rogers, University of Illinois farm economists, figure that it costs $1.26 a ton to harvest grass silage if the crop is as large as 1,500 tons. That much silage would make about 500 tons of hay. For a crop of only 75 tons, the equivalent of 25 tons of hay, cost is over six dollars a ton.

Up to 100 tons, the economists say, it's cheapest to put up loose long hay or hire baling and chopping done. A 100 ton hay crop will justify a baler. Harvest costs will be about the same, $7.75 a ton, whether you own a baler or hire one.

They say you can't afford to own a field chopper or forage harvester for a crop of less than 200 tons. It's cheaper to hire one. Most Illinois hay is baled, but baling costs varied from $16 down to $5 a ton, depending on size of crop.

Costs will depend on needed labor and equipment and on operation expense. *University of Illinois*

Beat That HEAT

Try these first aid suggestions for keeping chickens cool in hot weather . . .

Condensed from Poultry Tribune

James R. Miller

SUDDEN sultry hot summer days can mean death losses and a drop in egg production, unless your chickens can be made comfortable. Here are some ideas that poultrymen have used to help beat the heat.

Since chickens cannot sweat, most of the moisture they give off is in their breath. Therefore, the more water they can drink, the cooler they will be.

On hot humid days, make sure your birds have plenty of water. Not only give them more water, but more places to drink. Many producers set extra tubs and buckets of water on the litter, because they find that the birds will pile up around the regular fountains. Thus, the unlucky birds cannot get to the founts for a drink.

Sometimes it may be necessary to sprinkle the ceilings, walls, litter and even the birds with water. This is especially true if the litter is dry and dusty.

The birds may be frightened the first time they get wet, but they will soon learn to like it. Individual hens can be revived from heat prostration by "dunking" them in a pail of cool water.

The more air that can be moved through a house, the cooler that house is going to be. Do everything you can to ventilate the building. If you have ventilating fans, make sure they are running, especially if the temperature is around 90 degrees.

Keep the windows and doors open. If possible, take the windows out completely. Try to let air in from all sides of the building in order to provide cross-ventilation.

Last year some producers even knocked off several siding boards just above the foundation. This let in more fresh air near the floor where it was needed most.

Many poultry houses, especially in the south, have openings all along the sides of the buildings. These openings are covered with wire netting and can be covered

Reprinted by permission from Poultry Tribune
Mount Morris, Illinois

with feed sacks on cold nights. Other types of openings may be regulated by closing or opening a panel which is hinged to the wall. These panels can be made of boards or a glass substitute, depending on the climate.

The same insulation that helps to keep out the winter cold also will keep out summer heat. However, insulation underneath the roof is really more important than on the walls in hot weather.

This insulation can be fiber board, batting, fill type or any other type of insulation that will keep the heat from coming through the roof. Reflective insulation seems to serve this purpose very well. This type is usually insulation material covered with a thin sheet of aluminum foil. This way, the insulation not only keeps out the heat, but also reflects the light.

Since light colors reflect light and heat, and dark colors absorb them, it is a good idea to paint your hen house or range shelter a light color.

Aluminum paint, white paint, or whitewash make good coverings for poultry houses and shelters. Some poultrymen have found that a house will be 10 to 15 degrees cooler if the roof is covered with aluminum asphalt paint. This is especially true if the roof is made of builtup tarpaper.

A gable roof covered with aluminum sheeting seems to stay cooler even in direct sunlight. It reflects the sun's rays, and prevents heat penetration.

If your house has a galvanized roof, painting it with aluminum paint or whitewashing it will help reduce the temperature.

Sometimes it may be necessary to sprinkle the roof of the building. Again a garden hose or a power sprayer may be used to relieve the heat temporarily.

Some poultrymen punch holes in an old garden hose or plastic pipe with an ice pick and lay it along the top of the roof. When it is connected to the water faucet, it becomes a handy sprinkler. There are also similar types of plastic lawn sprinklers that can be used for this purpose.

If the roof is not too steep, litter or shavings can be spread on the roof to help hold the moisture. This idea is a big help in areas where summer water happens to be scarce.

The type of floor seems to have a bearing on keeping a chicken house cool. However, different floors work better under different conditions.

Concrete floors work fine if they are built so they won't conduct heat. This means they should be insulated and filled underneath to give good drainage.

In some areas, dirt floors have more of an advantage. However, this type of floor works better if

the inside dirt is six inches to a foot higher than the outside ground level.

In addition to the type of floor used, the type of litter is also important. Reports point out that old builtup litter has a tendency to generate heat. Consequently, many poultrymen favor the use of new litter in summer.

The depth of litter to use depends on several things. If the birds dig down through the litter to the floor, it shows that the floor must be cool. In this case, don't make the litter too deep.

On the other hand, if the floor is warm, deeper litter will help to keep the heat from rising and will make the chickens warmer than they are already. This is very important since their feet are tender and sensitive to heat and cold.

For layers that are confined or for a batch of broilers, it is suggested that more space be allowed per bird during the summer. By giving your birds more floor space, the air has more room to circulate, thereby keeping your chickens cooler.

When the birds are on range, make sure they have plenty of shade. If there are any trees near by, locate your shelter so that the birds can take advantage of them. Some poultrymen build temporary overhanging roofs on the range shelters to give extra shade.

If not much natural shade is handy, it might pay you to stick some posts in the ground and stretch wire netting across the top. Branches, straw or grass can be then laid on top of the netting to give protection from the sun. Sunflowers planted on the range also will give satisfactory shade in the summer.

Don't forget to protect your range waterers. This is important in order to keep the water cool. If water is piped to the range, the pipes should be under the ground. This will keep them out of the direct sunlight and will keep the water from getting hot.

Broilermen Need Volume for Profit

If you plan to enter the broiler business now, prepare to handle a large volume of birds and accept a small margin of profit.

That's a tip from Lawrence E. Dawson of Michigan State college. He says that competition in the broiler business is keen and a grower can't expect satisfactory profit unless he can handle at least 5,000 birds efficiently. Many broiler growers, he adds, have failed because their operation was too small, they had poor financial backing or limited experience, or market outlets were not dependable.

These Teen-Agers Always Have a

"Place to Go"

How one small rural community got together and solved their "youth problem" . . .

Condensed from The Ohio Farmer

Elsa Parker

MARK TWAIN once said: "Everybody talks about the weather, but no one does anything about it." All talk and little action. That has often been the case in solving the problem of wholesome recreation for rural youth. But there is at least one area in Brown County, Ohio, where something is being done!

A rural section centering around the Mount Orab high school district has made a step in the right direction.

In the fall of 1951, adults of the Mount Orab district listened to the requests of the young people, and together worked out an organization. Its purpose is to provide young people of the community with the opportunity for wholesome recreation.

To get the organization under way, representatives from the churches, lodges, clubs and business places met with the youth of the community. Together the representative groups discussed by-laws, rules and regulations. All of these had to be approved by both youth and adult groups before they were accepted.

An official governing board of seven adult members was elected. One member of the board is elected as supervisor. It is his job to meet with the adult board, and then with the youngsters when they hold business meetings, and to keep the work of both in harmony.

The official board of adults holds a business meeting on the first Monday of each month. This board rents a building, grounds, equipment and other items necessary for the benefit of the center. The board also handles all legal business that may arise. Each member of the board also serves for one week, as the adult to open and close the canteen, and to be present with the youngsters while the canteen is open. Thus, each board member serves every seventh week at the canteen.

Reprinted by permission from The Ohio Farmer
Cleveland, Ohio

The youth center is known as the "Mounties Dugout." Officers elected from among the members carry on the work of the canteen. Officers consist of a president, vice-president, secretary and treasurer. The by-laws set forth age and membership requirements and the duties of each officer. New officers are elected each year.

Dugout headquarters is a large store room, near the center of Mount Orab. It is open on Saturdays, Sundays and on all home-town basketball game nights. One adult board member is always present, and usually several parents are present, too.

The program has been successfully operating for nearly two years. It is wisely supervised by adults, but leaves much of the responsibility in the hands of the young people themselves. Canteen members have said this is one of the things that assure successful operation of a youth canteen. Teen-agers are anxious to have the opportunity to do things for themselves.

Expenses of the canteen are met with funds raised at dances, bake sales, basketball games and the like. These activities are planned and conducted by the canteen members. In rare instances a canvass is made of the town to solicit funds, but in the case of the Mounties Dugout, this has been done only once. Canteen members laughingly admit that there rarely is a surplus of money.

Any youth between the ages of 8 and 20, unmarried, and living in the Mount Orab high school district, is eligible for membership in the Dugout. At present there are 200 members signed up. Each member carries a membership card signed by himself and his parent. He also receives a card of rules and regulations, which must be signed by his parent. Dues are 10 cents a month. Each member is permitted to bring one guest.

A disciplinary board of seven Dugout members between the ages of 16 and 19 is appointed by the president. This board deals with any behavior problems that arise. In the more than 17 months the canteen has operated, this board has needed to act but once.

Quart of Milk Worth 42 Cents

Milk is the best food bargain on the market, says an extension dairyman. It's figured this way: A quart of milk contains one cent's worth of sugar, 2½ cent's worth of fat, 38 cent's worth of protein—if you figure the present price of a beef or pork roast; and a half cent's worth of vitamins and minerals.

The Santa Gertrudis

A brief discussion of a new breed of beef cattle and how it was developed

Condensed from The Cattleman

Roger B. Letz

SANTA GERTRUDIS is a new breed of beef cattle originated in Texas at the King Ranch. It is rapidly taking its place among the major beef breeds as more breeding stock becomes available.

The Santa Gertrudis is a very young breed and is the first breed of cattle that had its beginning in this country. Efforts to establish the Santa Gertrudis were begun by the King Ranch after World War I and in 1940, some 20 years later, these cattle were recognized as a distinct breed.

The establishment of the Santa Gertrudis represents one of the great achievements in animal breeding. The breed was founded through selective cross-breeding which produced the remarkable bull Monkey, the foundation sire of all Santa Gertrudis cattle. Monkey was approximately three-eights Brahman and five-eighths Shorthorn in breeding and had the ability to transmit his many desirable characteristics to his progeny.

In 1950 the King Ranch held its first auction sale of purebred Santa Gertrudis bulls, which has been an annual affair since. Only a small number of top bulls, usually about 25, are offered in the sale. In 1952, 21 bulls sold for an average of $8,583. The King Ranch also supplies other bulls to cattlemen who are developing Santa Gertrudis herds. They have sold as many bulls as possible without running the risk of slowing down their own breeding operations.

A sale, held last year for the first time, shows that Santa Gertrudis breeding stock has great demand. A group of breeders in the San Antonio, Texas, area sold 44 females for an average price of $1,669. This group now represents 12 herds and plans to continue to offer female breeding stock through public auction.

The past five years has seen a large growth in numbers of the breed. At first herds were established in South Texas and then in

Reprinted by permission from The Cattleman
Fort Worth, Texas

other parts of the state. Soon the breed spread to other states and foreign countries. At the present time there are Santa Gertrudis cattle in 21 states and several foreign countries.

During the past several years Santa Gertrudis cattle have been exhibited at several of the major livestock shows in the country where many cattlemen and others had a chance to see the breed for the first time. This year, at the state fair of Texas, Santa Gertrudis cattle will be shown and will participate in competitive classes.

In order to maintain the high standard of breeding on which Santa Gertrudis was founded and cope with other problems pertaining to the breed, a group of pioneer breeders formed a breed association, known as the Santa Gertrudis Breeders International. The organization was founded in 1951, with a charter membership of 169. The association set its standards high and is following a rigid program of individual selection before an animal can be accredited or certified as a Santa Gertrudis.

The association has grown at a rapid pace. Membership as of March, 1953, was 384, compared to the 169 charter members in mid-1951. Much of the out of state development has been accomplished since the association was begun.

The association has its headquarters at Kingsville, Texas.

There has been no "registration" of pedigree Santa Gertrudis cattle as such to date, but a provision in the constitution and bylaws of the association sets up the regulations governing registration which is expected to begin in the near future.

A rigid system of inspection and classification of Santa Gertrudis cattle has been followed since the association was organized. This system follows a standard of excellency and registry which states the minimum requirements for an animal to meet before it is classified as a Santa Gertrudis. At present herds are classified as "accredited" and "certified purebred." Later on there will be another classification known as "pedigree registered herds."

In order to meet the requirements of an accredited classification the herd must be inspected and approved by authorized personnel of the association. This inspector checks each individual according to the requirements of the standard of excellence pertaining to color, disposition, adaptability to climate, size and conformation. The owner of the cattle must provide satisfactory evidence that the females offered for classification are descendants of the bull Monkey and that the males are descendants of Monkey on both their sire and dam's side.

The cattle must be 18 months old before being offered for inspection. Cattle accepted are branded and given a permanent accredited herd number.

Certified purebred herds are those which, after first being classified, have a minimum of four top crosses, and meet all the requirements for pedigree registration, except for individual pedigree records. When the association opens the individual registry, owners of certified purebred herds may nominate cattle for registration, subject to certain additional qualifications.

Owners of Santa Gertrudis may use either the single or multiple sire herd methods of breeding. A single sire herd is a method of breeding where females are exposed to only one bull. A multiple sire herd has several bulls in the same pasture with a herd of breeding cows, and it is not possible to tell exactly which bull bred what cow. The multiple sire system is used to allow breeders to run large herds in large pastures. Since the Santa Gertrudis is a range type beef breed that converts grass to beef under adverse conditions, large pastures are used more frequently. Only animals sired in single sire herds whose pedigree can be definitely established will be considered for individual registration when the association begins registering cattle.

One of the high standards required by the association is the individual inspection of each animal classified. An offspring of a certified purebred sire and dam is not eligible for any classification on the merit of its ancestry, but must pass individual inspection according to the standard of excellence of the breed. The same rule will apply when cattle are registered in the future. The progeny of a registered sire and dam must still meet the inspection requirements.

The association plans to keep its herd books open indefinitely in order to accord recognition to valuable blood lines which may develop in the future. The individual inspection requirement of the association is an assurance to all breeders of Santa Gertrudis that all animals will be representative of the breed and is a precaution which will eliminate undesirable breeding stock which might otherwise be carried on the books of the association.

The Santa Gertrudis was developed to meet the specific requirements necessary for cattle to produce the most beef on the ranges of South Texas. Since its establishment and growth the breed has proved itself a valuable contribution to the beef cattle industry in all sections of the country, as well as on the ranges of southern Texas.

The cross-breeding program

that eventually led to the establishment of the breed was begun on the King Ranch in about 1910. Cross-breeding experimentation was continued until about 1918 when the King Ranch decided to develop a new breed from the Brahman-Shorthorn cross with the blood percentage being about three-eighths Brahman and five-eighths Shorthorn. It was several years before the best individual first cross bull appeared. This bull was named Monkey and a program of inbreeding to this sire marked the foundation of the Santa Gertrudis breed.

Monkey was sired by Vinotera, a Brahman bull obtained from the Pierce estate in Texas. His dam was a blood red Shorthorn that carried about one-sixteenth Brahman blood. Monkey was an outstanding individual as a calf and he was bred to the best first-cross heifers on the ranch beginning in 1923. His calves demonstrated his exceptional transmitting ability, both in good fleshing qualities and in cherry red color. They were outstanding when compared to other calves on the ranch, either those from Brahman bulls and Shorthorn cows or those from first-cross bulls and first-cross heifers. In his lifetime Monkey sired more than 150 useful sons. He died in 1932.

There are numerous ways for breeders to increase their herds of Santa Gertrudis eligible for accreditation by the association without having to buy accredited animals to begin with. Since there is a shortage of accredited breeding stock, especially in the females, most breeders who wish to increase their herds do so by buying certified purebred bulls and mating them to females other than Santa Gertrudis. It takes more than one top-cross to produce an animal acceptable to the association, the number of top-crosses depending on the heredity of the female used. In the case of a purebred bull being bred to a red heifer which is the progeny of a first-cross between a Brahman and Shorthorn it is very probable that the majority of heifer calves resulting from this cross would satisfy the requirements of type and color.

In the Hereford-Brahman cross, it usually takes more than two top-crosses of Santa Gertrudis to eliminate the brockle face, but once eliminated, it will not reappear when purebred Santa Gertrudis bulls are used. Breeders may use any breed of female as a base for breeding Santa Gertrudis. Hereford, Angus, Shorthorn, Brahman and others have been used satisfactorily. A minimum of four top-crosses is required for classification as a purebred.

This means that an animal of fifteen-sixteenths Santa Gertrudis blood is acceptable as a purebred, after passing inspection. The as-

sociation believes that after the fourth cross individual merit is more important than further fractioning.

During the past few years experimentation and testing of Santa Gertrudis cattle has been accomplished at various state experiment stations, technical foundations and by others interested in the beef cattle industry. Santa Gertrudis cattle have been moved many thousands of miles to areas quite different from their South Texas origin and have performed well under many varied conditions and environments. The breed has responded well in the feedlots and has shown its ability to produce beef from grass in many range areas in the United States and in several foreign countries.

A polled strain of the breed is being perfected through the breeding efforts of Mrs. W. M. Wright of Kingsville, Texas.

The College of Arts and Industries, Kingsville, Texas, has a small herd of excellent Santa Gertrudis cattle which were obtained through the efforts of Don Stone, Raymondville, Texas; Robert J. Kleberg, jr., and Richard King. The cattle are being used for educational purposes in the school of agriculture and the college is following a constructive breeding program. It is the plan of the college to establish a 50 cow herd of purebreds in the future.

The Santa Gertrudis was developed by the King Ranch because of the need for a hardy animal that could adapt itself to the range conditions of South Texas and produce the maximum amount of beef from grass. Although relatively new as a breed it has proved itself not only as an efficient converter of grass to beef in South Texas, but in many other areas as well.

Which Stayed in Farming?

I left my dad, his farm, his plow
Because my calf became his cow;
I left my dad, t'was wrong of course
Because my colt became his horse;
I left my dad to sow and reap
Because my lamb became his sheep;
I dropped my hoe and struck my fork
Because my pig became his pork.
The garden truck I had to grow
Was his to sell and mine to hoe.

With dad and me it's half and half
The cow I own was once his calf;
No town for mine, I will not bolt
Because my horse was once his colt.
I'm going to stick right where I am
Because my sheep was once his lamb.
I'll stay with dad — he gets my vote
Because my hog was once his shoat.
It's fifty-fifty with dad and me
A profit sharing company.

Arkansas Service Bulletin

Fence Posts With NINE LIVES

Condensed from The Ohio Farmer

R. L. Sarles

FENCE posts will last many times longer if they are treated with chemical preservatives.

Modern wood preservatives enable the farmer to make greater use of his native timber. Today he can buy efficient and economical preservatives which make home treating easy and worth while. Lumber dealers are also in a position to furnish treated wood for longer life in farm service.

In recent years, chlorinated phenols and metal naphthenates have promoted more universal wood treating. These wood preservatives are adapted for use by soaking, dipping, brushing and spraying. Each of these methods will lengthen service life, depending upon the amount of preservative absorbed and the use to which wood is put.

Some woods do not require treatment. Fence posts of yellow locust, osage orange and mulberry are in this class. Heart white oak, black locust and catalpa, when used for sills or similar purpose in farm buildings, do not require treating.

The Ohio Agricultural Experiment Station worked on the problem of making nondurable woods such as pine, elm, gum, red oak, hickory and cherry last longer. The process in use is the "cold soak" method with copper naphthenate as the wood preservative. The entire operation is simple; the equipment inexpensive; and the preservative cheap. It costs as little as nine cents to treat a three inch pine post adequately.

Here is the procedure for treating posts:

(1) Cut for posts only woods known to treat satisfactorily.

(2) Peel the posts completely of both the outer bark and the paperlike inner bark.

(3) Air dry ricked up posts through the summer months.

(4) Soak the posts in the treating solution for a period ranging from a few hours to as many as 48 hours, depending upon kind of post.

This same method was used to treat plantation grown white pine poles for a 39 by 126 foot pole type farm building constructed at the experiment station this past June.

A special treating tank was

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Cleveland, Ohio

made from five hot water tanks welded end to end. The tank held poles 17.3 feet long. One large pole or two small poles could be treated at one time. Poles soaked for 18 hours absorbed an average of 7.2 pounds of preservative per cubic foot of wood, and the material penetrated to an average depth of three-fourths inch. The cost of material to treat the average pole was approximately $1.50. These poles are expected to last 25 or more years.

Corn Silage Gives More Beef an Acre

An Ohio project gives beef producers some ideas on how to get the most pounds of beef in return for a given acreage of crops.

Results of the experiment indicate that feeding corn silage gives the highest beef gain per acre—530 pounds—at a comparatively low cost. The silage required per hundred pounds of gain for one lot of 10 steers averaged 1,000 pounds. Additional feeds for this lot per 100 pounds of gain were 354 pounds corn and cob meal, 63 pounds of soybean meal, and 133 pounds of hay. Total feed cost per hundred pounds of gain was $19.07.

Another phase of the same project compared the rate of gain and relative economy of corn silage versus grass silage. Steers eating grass silage and a half feed or 8.5 pounds of corn and cob meal made a slightly lower average daily gain than those on the same grain ration with corn silage. Steers ate 1,400 pounds of grass silage per 100 pounds of gain, and the total gain per crop acre was 475 pounds.

Project leader E. W. Klosterman of the Ohio Agricultural Experiment Station points out that all feed used in the test was harvested at the experiment farm. Only by this method was he able to show the actual pounds of beef gained per acre of crop.

Reason for the difference between corn silage and grass silage is that the latter is low in carbohydrates or readily available energy. Cattle on grass silage usually make fair gains only during the first few weeks, Klosterman says. In the test, a proper balance between corn and cob meal and hay crop silage has been economical because the ration required no additional supplement.

Carcass grading of the experimental steers showed the corn silage group led with one prime and nine choice compared to no prime carcasses, six choice and four low choice for the grass silage lot.

Ohio Extension Service

Brome as a Weed Killer

BROME grass get sod bound? Not for Henry Roth, Brown County, South Dakota, farmer.

Brome works for Roth, weeds his fields, provides hay, yet isn't allowed to become sod bound, as brome is apt to do once it gets a good toehold.

* * *

Wages paid to hired farm help in the U. S. increased to a record high last year. The average farm wage rate in 1952 was $36.50 per week without board or room.

* * *

Roth handles his brome this way. First it is seeded, by the broadcast method, into a field heavily infested with such weeds as mustard and sunflowers. The field is disked and left for a year.

Fairly early the second year, weeds are cut, raked and burned. Brome is encouraged. By the third year the stand is heavy, with scarcely a weed to be found. Brome is cropped for hay.

Within a couple more years the brome, if it were left alone, would use up the nitrogen in the soil and become sod bound. It wouldn't grow well; wouldn't produce good hay.

To correct that, Roth plows up his brome about the fifth or sixth spring and seeds a mixture of flax and alfalfa. He takes one crop of flax (up to 10 bushels per acre in years when moisture is sufficient), then lets the alfalfa come on. Brome comes back, too.

By plowing only when plenty of moisture is available, Roth has no trouble from brome being killed out. Rather, it comes up along the furrow laps first, then spreads into the alfalfa to make fine hay. The plowing, plus the boost from nitrogen supplied by the growing alfalfa, licks the sod bound problem and gets brome grass back into top production.

* * *

The U. S. Department of Agriculture estimates that milk production for 1953 will probably be up two or three billion pounds over the 115 billion pounds produced in 1952.

* * *

Eventually the brome will take over again, become sod bound. Then the renovation job must be repeated.

With his combination, Roth has even more than a weed killer. He has good hay. He has no cash outlay for commercial fertilizer because alfalfa furnishes the nitrogen needed to keep brome producing. Flax provides a cash crop in the middle of the rotation.

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St. Paul, Minnesota

Value of Organic Matter

Difference between chemical and organic fertilizers may not show in yield, but livestock can tell the difference . . .

Condensed from The Rural New Yorker

Willim A. Albrecht

THE declining numbers of acres left for growing crops, and the dwindling supply of soil fertility, are bringing home to us the necessity of properly fertilizing our soils. The tonnage of available barnyard manure has long been insignificant as a source of fertilizer supply. Gradually we are coming to realize the basic fact that our soils are being rapidly worn out, because of our old concept of using them as a source for cash crops rather than as a means of growing crops completely to nourish our animals and ourselves.

Organic matter, such as animal and plant manures and accumulated virgin soil, has always been the most desired form of fertility for growing our crops. Now that we have mined most of the original organic matter supply, to say nothing of the inorganic, we are debating the question among ourselves as to whether we can produce good foods and feeds from our crops when they are grown without organic manures to help fertilize them.

Soil itself originated from the rock minerals. In trying to learn what the soil feeds to the plant, we made a list of the inorganic elements found in the plants after reducing them to ashes. Inventories of the inorganic elements in the plants were then matched against inventories of the soil's similar contents. Such knowledge built up the inorganic concept. This knowledge also is serving well for our testing of the soil's needed supplies as against the growing plant's contents; for we have learned that a growing plant contains 13 or more essential inorganic elements which move into

Reprinted by permission from The Rural New Yorker
333 West 30th Street, New York City

the crop from the soil. By the help of such tests, we make our decision when buying needed chemical fertilizers to act as supplements to the incomplete plant and animal matter of the soil.

Success to date in improving the yields of our crops, by means of commercial fertilizers, has naturally emphasized the crop's need of inorganic nutrients from the soil. Unfortunately, such success, in some instances has made us prone to discredit the value of both plant and animal manures. It has encouraged us to believe that manure is worth no more than the total of nitrogen and inorganic elements it contains. Yet tests have shown otherwise when plants are grown by hydroponics, or water culture. The growing of plants in pure water, to which has been added the chemical equivalents of the manure's ash components, is not the equivalent of growing them in rotted manure itself.

Organic processes in general, however, and most biochemical reactions, do not give such speedy comparative performances. Even some inorganic reactions, particularly those including the element silicon, making up such large molecules as the clay, are slow and sluggish. Only lately have we become able to build up organic compounds like the synthetic fibers (rayon, vicara, orlon and others of industrial output) to substitute for those created naturally. Something of this sort may later become applicable for soil use.

Plants will grow when fed on strictly inorganic elements in water, but that fact is no refutation of the possibility that such a seemingly good diet for plants might not be a better one if supplemented by some organic compounds. The limitations of hydroponics indicate how much such plant growth procedure differs from that of plants growing in the soil.

The pioneer farmer looked much to the organic matter of the soil to produce the crops for feeding his young animals. Early sales of commercial fertilizer, particularly in the south, met with resistance, due to the farmers' just contention that bird guano from South America helped their crops more than they were helped by Chile saltpeter.

Now we find that the antibiotics are doing wonders for us. Water extracts of the organic matter in soils serve as growth hormones in the laboratory for test plants. Hogs have long had the habit of rooting. They have been grown more rapidly under experiment if allowed on pasture, or if fed some sod soil or its equivalent in antibiotics, as compared to strictly dry lot feeding. Isn't it then time that we open our minds to the possibility that organic compounds, as well as in-

organic, may be needed for better plant and animal nutrition, and for superior reproduction of their respective kinds?

Mushrooms are a food crop that grows by feeding wholly on organic matter. They grow in the dark; consequently they do not use energy directly from the sunlight. For energy, they must absorb organic compounds, and burn them or respire them. They create living organic matter by using dead and decaying matter.

Some field tests have been conducted at the Missouri station on the use of various kinds and combinations of organic and inorganic fertilizers for growing field corn. In these tests corn was grown on three plots treated as follows: (1) Limestone, (2) limestone and phosphorus, and (3) limestone, phosphorus and potassium. On these three experimental plots sweet clover was grown as a green manure crop, then plowed under ahead of the corn. As a control, corn was also grown on three comparable plots which received exactly the same inorganic fertilizer applications (1, 2 and 3), but in this case the sweet clover was allowed to occupy the plots for the entire season. The sweet clover plants grew to maturity and produced seed; the seed was harvested and the remaining plant residues were then plowed under in the fall to be followed the next season with a corn crop.

As a result of these treatments and applications, higher yields were obtained when larger and more complete combinations of inorganic fertilizers were used as in plot No. 3. However, there was no significant difference in corn yield between using the sweet clover planting, earlier in the season as a green manure crop, as compared with letting it mature.

The grain grown on each of these plots was harvested and later put in separate compartments of self-feeders, and made available to hogs. The hogs voted, as manifested by their appetite, in favor of organic matter in the form of mature sweet clover residues (plus the fertilizers used in plot No. 3), as compared to the clover as an immature green manure crop.

Recent research by Dr. Francis M. Pottenger, jr., of Monrovia, California, points out that differences in the way the feed was handled or processed, for the animal making manure from it, may be reflected as corresponding differences in the character and manner of growth by the plants and their seeds on soil fertilized with such manure. For example, some dwarf bean plants were grown on the sand of various pens into which cats had buried their dung for the two preceding years. The pens included cats fed alike in all respects except for differences in their milk, which includ-

ed: (a) Condensed, (b) evaporated, (c) pasteurized, and (d) natural (raw) milk.

At the end of the tests, it was clear that the four different kinds of milk, fed to the cats, produced different growth effects on the bean plants which had been fertilized by these various cat dungs in the sand pens. Dung from all the cats that were fed heated milk produced only s p a r s e plant growth. On the other hand, dung from cats fed the natural (raw) milk produced such fertile soil that a dense, healthy plant growth resulted.

This first bean growth later was removed, and the pens were then seeded to the ordinary white bean of dwarf growth habits. It was most surprising to note that in all six pens, in which the buried dung was from cats fed the heated milks (condensed, evaporated and pasteurized), the b e a n plants grew only as dwarf plants. But in the two pens in which the buried dung was from cats fed unheated milk, the bean plants grew, not as dwarf plants, but as pole beans with their vines going to the top of the screened sides of the pens. Here is an illustration that organic compounds, as well as the inorganic elements, may be travelling in cycles: First, from the soil into the plant, for their build-up into more complexity there; then into the animal, for possible digestive simplification there and later, through the excretions back to the soil, for another cycle of nutritional service.

It is particularly significant that the illustration cited relates to the amino acid tryptophane, which is the major deficiency protein of the corn grain.

When the effects from fertilizers on soils are measured only by yield variations in vegetative bulk, recorded as tons and bushels, there is little chance that we shall recognize crop differences demonstrating the varying effects between the use of inorganic and organic fertilizers. Our animals, however, tell us that the crop's nutritional quality reflects the different organic and inorganic compounds feeding the plants. When we learn to measure the crop's responses to soil fertility by more than bulk values and ash differences, then the contributions of the soil, both organic and inorganic, to plant nutrition will be more correctly realized.

* * *

Bee-keepers have cause to buzz with hope. Entomologists of the U. S. Department of Agriculture r e p o r t prospects good for a new strain of mild-tempered, disease resistant bees that will produce plenty of honey.

* * *

Where few farmers have ever used the services of a bank . . .

Point 4 Helps Develop Agricultural Credit

Lee Ross

Institute of Inter-American Affairs

SUPERVISED agricultural credit is an important tool for building a better agriculture. The governments of a number of Latin American countries have recognized the need for agricultural credit and have established banks to provide it.

The supervised credit program in Costa Rica is an example. The Banco Nacional works with the United States Point 4 agricultural program through an administrative agency known as a *"Servicio."* The *Servicio* is a bureau of the Ministry of Agriculture into which both the governments of Costa Rica and the United States, represented by the Institute of Inter-American Affairs' Technical Co-operation Administration, pool funds and technicians.

The extension agents of the co-operative *Servicio* provide the guidance to individual farmers in planning their credit needs and investing the money wisely, and in carrying out the suitable farming practices. During the first six months of the 1952 calendar year the Banco Nacional of Costa Rica made 12,843 agricultural loans, the largest number during a six month period to date. The loans amounted to a total of C 14,720,-575 ($2,596,221 US). No United States funds were used in these loans.

With few exceptions, the areas covered by the 38 rural agencies of the agricultural credit department of the Banco Nacional are also serviced by 30 extension agencies of the *Servicio* and the functions of each are carried out in close co-operation. It is now becoming standard policy of the Banco to grant loans only to those farmers who agree to follow the recommendations of the extension agent. The Banco Nacional of Costa Rica established a branch for agricultural credit in 1937, and another branch in 1945 for a storage and marketing system to stabilize prices of agricultural products. Then, in 1948, the co-operative *Servicio* began working closely with the Banco to furnish the supervision essential to the

success of the program.

In Paraguay, the co-operative agricultural *Servicio* has pioneered in supervised farm credit since 1943. Point 4 technicians have helped train them and have guided the training operation for all rural farm and home supervisors engaged in the program, and they have provided technical back-stopping to the credit agency known as CAH (Credito Agricola de Habilitacion). This agency is financed entirely by the government of Paraguay both as to loan funds and administrative expense. There are now nearly 200 farm and 60 home supervisors working through district and zone offices. The co-operative agricultural program provides the complete technical guidance needed in a country where educational facilities and opportunities are few. The credit services offered by CAH include help in resettlement of farm families from the overcrowded central zone to more sparsely populated agricultural land.

In Haiti, the local credit unions are conducting an educational program in co-operation with the *Servicio*. Each credit union requires its members to take part in study groups through which *Servicio* technicians give guidance in banking procedures and the management of money. This first step is necessary before agricultural credit can be considered because few rural people in Haiti have ever used the services of a bank. If they have been able to accumulate a little money the common practice has been to hide it in the ground perhaps, or in the walls of houses, or in sections of bamboo, through fear of entrusting it to someone else. Oftentimes the hidden money is lost. Through the educational program, it is expected that an atmosphere will be created in which an agricultural credit program can be successful.

In Honduras, the *Servicio* agricultural program is establishing close co-operation with the newly formed Banco de Fomento. Extension agents and Banco agents share the same offices and work side by side in some districts, while in others agents are authorized to act for the Banco. *Servicio* technicians participate in the technical guidance and supervision of the loans.

* * *

A process for producing unshrinkability in wool has been developed in Australia by the Commonwealth (Federal) Scientific and Industrial Research Organization. If successful, the process will be of vital importance in strengthening the competitive value of wool against synthetics.

* * *

COASTAL BERMUDA

Triple-threat grass on the cattleman's team produces pasture, hay or silage . . .

Condensed from Better Crops With Plant Food

Glen W. Burton

FROM southeastern Oklahoma to the Atlantic and south to the Gulf, farmers and cattlemen are planting Coastal Bermuda. The acreage in 1953 will exceed, by a substantial margin, that planted in any previous year. A modern Rip Van Winkle, awakening after 20 years of sleep, would most certainly shake his head and repeat again and again the simple question, "Why?"

Back of his question would be a lifetime of fighting Bermuda grass, a battle that had relegated it to the position of public enemy No. 1 on most cotton farms by 1933. At that time only the cattlemen were conscious of its value as a pasture plant. Rarely did they plant it, for they could usually meet their feed requirements by grazing fields in which Bermuda grass had won the battle.

One might well begin his answer to the question by pointing out that Coastal Bermuda is a triple-threat grass. Common Bermuda makes good grazing but rarely grows tall enough to mow. Coastal Bermuda, however, grows tall enough to produce hay or silage in addition to supplying excellent grazing. Thus, surplus grazing can be used for either hay or silage and a year-around supply of feed can be obtained from one grass.

Important as the triple-threat character may be, there are other reasons for planting Coastal Bermuda. Much of the interest in 1953 stems from the superior drought resistance shown by this grass in 1952. Farmers throughout the south reported that Coastal Bermuda remained green and supplied grazing after common Bermuda and many other pasture grasses had turned brown. Rainfall during June and July, 1952, was 57 per cent below normal at the Georgia Coastal Plain Experiment Station, yet beef production for the total season was only five per cent below the 1950-'51 average. Total hay production was comparable to that obtained in previous years. Root studies conducted on deep sand during the

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Washington, D. C.

past two years suggest that a more extensive and more active root system was largely responsible for the greater drought resistance of Coastal Bermuda.

Coastal Bermuda carries a great deal of hybrid vigor, that mysterious force that makes hybrid corn yield more than open pollinated varieties. It also has longer leaves and stems, grows taller, and spreads faster than common Bermuda. Although its stems and leaves are quite coarse, cattle have consistently grazed it in preference to common types. Chemical analyses indicate that it is equal or superior to "cotton patch" Bermuda in food value.

Coastal Bermuda is more resistant to the leaf-spot diseases than the common types. Since these diseases cause the leaves to turn brown and lower the food value, it is evident that resistance means more and better feed.

Coastal Bermuda makes more growth in the fall and tolerates a little more frost than common Bermuda. In grazing trials at the Georgia Coastal Plain Experiment Station it has produced more beef after August 1 than other perennial grasses.

Clovers and lespedezas grow well in association with Coastal Bermuda when fertilized and managed properly. It has been found highly resistant to root knot-nematode attack, whereas most common Bermudas are susceptible. This characteristic favors the growth of legumes on nematode infested soils.

Coastal Bermuda was named after the experiment station where it was developed. Some have assumed it to be adapted only to coastal areas because of its name. Numerous reports from experiment stations and farmers indicate, however, that it is superior to common Bermuda throughout most of the Bermuda Grass Belt.

Over a five year period ending in 1948, Coastal Bermuda produced an average of 116 pounds more beef per acre than common Bermuda growing in an adjacent pasture. Both pastures were fertilized with 600 pounds per acre of 0-12-6 every third year and 36 pounds of actual nitrogen per acre annually. Pensacola Bahia grass, another popular southern grass included in this test and fertilized in the same way, produced 52 pounds less beef per acre per year than Coastal Bermuda.

Coastal Bermuda must be propagated vegetatively due to its poor seeding qualities. Although this feature has slowed its rate of distribution, it has not seriously handicapped its utilization on the farm. Farmers growing their own planting stock are finding that it costs less to establish Coastal Bermuda than to plant other pasture grasses from seed. An estimated 500,000 acres have been planted in Georgia alone.

The farmer planning to plant Coastal Bermuda for the first time will do well to consider starting on a small scale. One or more acres planted on clean land and well cared for will, within a few months, furnish an ever ready supply of good, fresh sprigs at very low cost. Sprigs for these nurseries will go further if planted like sweet potatoes, i.e., pushing them into the soil with a thin, forked stick and stepping on them to firm the soil around them. Large scale planting will be facilitated by the use of the Pray Bermuda grass planter and mechanical planters designed for setting tobacco, trees and other plants. General planting recommendations are:

1. Plant only when the soil is moist.

2. Dig the sprigs by pulling a springtooth harrow over the sod. Rake up the loose sprigs after each harrowing. A side-delivery rake does an excellent job.

3. Dig only enough sprigs to plant a half day at a time. Keep them fresh until planted. Remember Coastal is easier to kill than common Bermuda.

4. If mechanical planters are used, be sure they are feeding all of the time.

5. Use plenty of sprigs. You can afford to when you grow your own. Your Coastal Bermuda pastures that are free of common Bermuda will make a good source of sprigs at no cost other than the harvesting operations.

6. Control the weeds. Clean cultivation during establishment is much better than mowing or grazing. Plant in standard width rows to facilitate cultivation without changing tractor wheels and equipment.

The high production records set by Coastal Bermuda when heavily fertilized have caused many to assume that it will not grow on poor soil. Actually, repeated tests have shown that it will outyield common Bermuda on the poorest soils. Research workers and the better farmers know, however, that the cost of fencing and establishing a pasture is so high and the per acre production without fertilizer is so low that one can hardly afford not to fertilize. Thus, the important question is "Which grass or pasture mixture will utilize fertilizer most efficiently and give the greatest return per dollar invested?"

Measuring the beef produced per acre by different grasses when fertilized uniformly is one method of measuring this efficiency. The percentage recovery of the fertilizer elements applied is another. In a carefully controlled experiment carried out at Tifton, Georgia, in 1952, the clippings removed from Coastal Bermuda, common Bermuda, and Pensacola Bahia contained 63.6, 34.8 and

53.5 per cent of the nitrogen fertilizer applied, respectively. These results follow the same order as the grazing results previously mentioned and indicate that Coastal Bermuda is more efficient than the other two grasses in the use of fertilizer, particularly nitrogen.

Legumes should be grown with Coastal Bermuda whenever soil conditions will permit. In addition to furnishing high quality forage, they also produce considerable nitrogen for the grass. At Tifton, Georgia, in 1952, three Coastal Bermuda pastures fertilized with 500 pounds per acre of 0-10-20 and planted to crimson clover produced an average of 365 pounds of beef per acre. Applications of 50 and 100 pounds of N per acre without clover produced 279 and 451 pounds of beef, respectively.

The Alabama Experiment Station obtained 10 months' grazing on Coastal Bermuda in 1951-'52 by fertilizing with 800 pounds of 0-16-8 and 100 pounds of ammonium nitrate in the fall and overseeding with crimson clover and ryegrass. The clover-ryegrass mixture produced 430 pounds of gain per acre on yearling heifers during the winter and spring and the Coastal Bermuda, during the summer, produced 420 pounds of gain. An additional 200 pounds of ammonium nitrate were applied per acre during the summer.

Successful growth of winter legumes with Coastal Bermuda requires that adequate supplies of all growth factors be present. Plant nutrients, particularly phosphorus and potassium, should be applied each fall. Mowing or close grazing in the fall will reduce the competition for light and water and will usually facilitate establishment. Some farmers report that disking the sod lightly in the fall gives better stands of reseeding crimson clover. The repeated loss of young seedlings after each shower during a dry fall is one of the greatest causes of failure. Such losses can be reduced by planting clover on the heavier and wetter soils. Irrigation, where possible, is the best solution to this problem.

Coastal Bermuda will also produce forage and beef at a profit under conditions where legumes cannot be successfully grown. Experiments designed to measure the quantity of nitrogen that may be profitably used under such circumstances show that annual applications of 32 pounds of N per acre will maintain a good sod, carry at least one steer per acre, and produce around 250 to 300 pounds of beef per acre per year. Extra nitrogen applied to Coastal Bermuda pastures at the Georgia Coastal Plain Experiment Station produced two pounds of beef per pound of N up to 200 pounds of N per acre. This 200 pound ap-

plication plus some phosphorus and potassium produced 685, 697 and 655 pounds of gain per acre during the past three years. These results are the basis for the recommendation "Fertilize with nitrogen to produce the feed you need. If rainfall is adequate, at least 200 pounds of N per acre will be profitable under grazing."

Over a period of years at Tifton, Georgia, Coastal Bermuda has produced eight tons of hay per acre per year when fertilized with 400 pounds of N (1,200 pounds of ammonium nitrate) per acre and adequate amounts of phosphorus and potash. Without fertilizer, it produced one ton of hay per acre per year. Heavily fertilized hay averaged 13 per cent protein, nearly twice that in the unfertilized hay. Increased yields and fixed costs of land and many haymaking operations kept the cost of producing a ton of hay fairly constant (around $12, with nitrogen costing 12c per pound) regardless of the amount of nitrogen applied. Cost per pound of crude protein decreased from 9c to 5.6c per pound as increasing quantities of nitrogen up to 400 pounds per acre were applied.

All grasses require the primary, secondary, and some minor or trace elements for normal growth. Most of the heavier soils supply enough of the minor elements and a sound liming and fertilization program usually takes care of the requirements for calcium, magnesium and sulfur, the so-called secondary elements. The primary elements, nitrogen, phosphorus and potassium, usually should be applied annually for most efficient production. The quantity that must be applied depends upon the supply in the root zone, the efficiency of the plant in obtaining this supply, and the quantity required by the plant for normal growth.

Management

To grow more grass than is used is wasteful. Undergrazing results in an accumulation of stemmy growth that soon becomes woody and unpalatable. Moving animals from one pasture to another helps to overcome this difficulty. Taking one or two cuttings of hay from each pasture prevents the accumulation of stemmy grass and helps to control weeds. One successful Georgia farmer mows his Coastal Bermuda pastures and saves his hay while the animals are grazing. Usually half the acreage required to carry a herd of cattle in the spring and fall will furnish enough grazing during midsummer. The other half can be set aside for hay or silage production, and will represent an excellent reserve should an extended drought require its use for grazing.

Hay and Silage

Feeding trials conducted by B.

L. Southwell and his associates at the Georgia Coastal Plain Experiment Station indicate that Coastal Bermuda hay is relished by all classes of cattle and work stock. Two year old heifers and cows have been wintered on Coastal Bermuda hay without supplement and have made gains of one-third pound or more per day. They have consumed from three-fourths to one ton of hay per head during a 100 day wintering period. Suggestions for those who plan to produce Coastal Bermuda hay follow:

1. Keep all haymaking equipment in top condition.

2. Mow when grass is 16 to 18 inches high (every five to six weeks in midsummer). Frequent cutting hastens curing and improves the quality of the hay.

3. Leave the hay in the swath until dry enough to bale or put in the barn.

4. Fertilize liberally for high quality hay.

Small scale tests indicate that Coastal Bermuda makes good silage. Generally, some water must be added. Farmers having silos can avoid hay spoilage during rainy periods by making silage.

How to Truck Hogs in Hot Weather

Hot weather can kill a hog in less time than it takes to get the animal to market, warns Ralph Westing, jr., Virginia animal husbandman.

To keep hogs alive from farm to market during hot weather, Westing suggests that farmers and truckers provide proper truck ventilation. Trucks need vents at the front and open, slat sides.

Wet sand keeps hogs cooler than straw bedding. Farmers and truckers who inspect their loads at every stop while on the way to market will be more certain of saving high priced hogs. Wetting down bedding will help keep hogs cool even when temperatures are high.

Empty livestock travel best. Animal husbandmen recommend omitting the last feeding of hogs before moving them to market. If they reach market early enough, they can be fed there. Moving tires fat hogs, however, so they may not eat until they have rested two or three hours. Allow plenty of time for hogs to rest and feed after reaching market.

It also is advisable to omit the last grain feed for cattle and to let them fill on the driest hay available. Low protein hay is better for cattle ready to travel. *Virginia Polytechnic Institute*

Pig Pastures Pay

Take your choice of pasture crop to produce cheap gains

Condensed from The Dakota Farmer

GOOD pasture always increases pig profits and sometimes makes pig profits when otherwise there would be a loss.

Many factors must be recognized, in accounting for the profit producing effects of pig pasture. Although the digestive system of swine is naturally designed for handling concentrated feeds, it is still a fact that pigs get something out of pasture that even the most scientifically blended ration of concentrates cannot provide.

Pasture not only provides proteins, minerals and vitamins; but reduces the consumption of expensive grains and supplements at the same time.

Experiments can accurately show the ability of pasture to produce cheap gains, but there are other good effects than can only be estimated. The exercise pigs get in grazing makes them more vigorous and thrifty, but vigor and thrift cannot be figured in definite values. Clean pasture has a tremendous value from a sanitary standpoint — disease and parasites often found in hog lots are capable of wiping out all the profits, or possibly even wiping out most of a herd.

The choice of a pasture crop depends to a large extent upon what crops are most reliable in a given area. Alfalfa has a well deserved reputation as the best pasture for pigs. In sections where it grows well, alfalfa provides green succulent pasture from early spring to late summer. Not only are more pork gains made on alfalfa than any other crop, but it is often possible to take hay from the same plot.

Avoid Overgrazing

One precaution that must be taken with alfalfa pasture is to avoid continuous overgrazing. Grazing can be controlled by providing several plots, and letting pigs graze on one plot while the other is growing up to be cut for hay. Pigs can then graze on new plants after the hay is re-

Reprinted by permission from The Dakota Farmer
Fargo, North Dakota

moved. Another way to avoid damage to the stand is to understock the pasture, so the alfalfa grows away from the pigs; then clip with a mower before the plants become unpalatable. Grazing can be rotated by clipping only half the pasture at a time—pigs confine practically all of their grazing to the most recently clipped plants.

Perhaps it should be explained why clipping to keep alfalfa green and palatable is not harmful, but overgrazing is harmful. Pasture is clipped only when the plants are mature enough so they begin to get coarse and tough. When alfalfa gets that old, it means that food reserves have been stored in the roots. When alfalfa is grazed so heavily that it is kept short and succulent, there is no storage of food, and the entire stand is vulnerable to winter kill. Good alfalfa pasture can carry up to 25 or 30 growing pigs per acre if the pigs are on full feed; but the best grazing rate may be only half that number if pigs are on limited feed. There is no danger of swine bloating on alfalfa pasture.

Clovers, rape, soybeans, cereal grains and sudan grass are some of the other crops which have value as swine pasture. In some areas, the only way to have summer long pastures is to grow several crops, and manage them so they come into grazing condition at different stages of the season.

Clovers and Rape

Red clover and ladino clover are adapted to some areas and where they thrive they are nearly as good as alfalfa for pasture. Unless the farmer knows he has some special reason for doing so, however, it is usually not profitable to replace alfalfa with clover. One place where red clover might profitably replace alfalfa is on soils that are not well drained. Alsike is another clover which may have advantages under special conditions; it will make pasture on some soils that are too wet or too acid for alfalfa or red clover. Since clovers are not as rich as alfalfa in protein, pigs on clover should get more protein supplement than pigs on alfalfa.

Sweet clover can be grown in some sections that are unsuited for growing any other legume, and although not equal to alfalfa, red clover, or rape it has considerable value as a pig pasture. Pigs usually do not like sweet clover at first, but they get accustomed to it. A good practice with biennial sweet clover is to sow it early in the spring and pasture it during the first year's growth. It provides fairly good grazing the first year, but becomes rank and coarse the second year. If sweet clover is used for pig pasture, it may pay to have a first year growth always ready, and keep it clipped back with a mower.

Best Single Pasture

Rape has far greater value as a pasture crop for swine than its popularity would indicate. In fact, rape has been called the best single temporary pasture crop for pigs, in areas where it is adapted. Rape grows well enough to make good pasture wherever corn is a reliable crop. One of the outstanding qualities of rape is its ability to stay green and succulent late into the fall; it survives frosts severe enough to kill most other crops. It can be seeded in early spring, and grazing can start in about 10 weeks, or when the crop is about 8 to 10 inches high.

Grazing on rape should be heavy enough to make full use of the crop, since it is an annual and there is no concern for a stand in succeeding years. However, it is possible to graze rape so heavily that it will not last out the one season. If plants are grazed down to about four or five leaves per plant, pigs should be taken off until the crop recovers.

The mistaken belief that pigs do not like rape has been explained by the fact that the crop sometimes grows so rapidly that pigs can't keep up with it, making it appear they are refusing the plant.

Cereal Grains

All the cereal grains commonly grown can be used for pig pasture, but they do not furnish good season long grazing like alfalfa, clover and rape. Cereal grains make good grazing only in the early stages of growth. Because of this limitation, some pig growers use cereal grain pasture in combination with other pastures. An example of such a combination is to have winter rye for an early spring pasture, sudan grass for mid-season pasture and rape sown late in the summer for fall pasture. Young, green rye and other cereals are richer in protein than good alfalfa hay (on a dry basis), but it pays to furnish a protein supplement with cereal grain pasture. Winter rye is the most popular and generally considered the best of the cereal grains for pig pasture in many areas.

If Drouth Hits

Sudan does not have the quality of alfalfa, clover or rape as a pasture crop, but under drouthy conditions it may make grazing when other pastures fail. Young pigs are unable to get as much good out of sudan as pigs at least 50 pounds in weight. Even small pigs, however, are much better off on sudan than on no pasture at all. A good protein supplement is needed for pigs to make good gains on sudan pasture.

The importance of pasture sanitation cannot be overemphasized, regardless of what type of pasture is used. Pigs should never graze the same pasture in succes-

sive years, and it is highly recommended to have pigs on a pasture no oftener than every third year. Disease is much easier to control in well drained pastures.

Pigs on pasture should have shade and plenty of fresh water. Salt should be supplied at all times, except possibly when tankage, meat scraps or fish meal are fed as the only supplements.

Why Your Milk Tests Vary

Thirteen known factors affect the per cent of butterfat in milk. These factors can cause wide variations. Probably half of your cows vary between one and two per cent during their lactation, with a few as low as one-half per cent and others as high as six per cent.

Many complaints are made to milk buyers at this season that the milk test is too low. Among the 13 causes of variation in per cent fat, season of the year is of major importance.

One study showed a group of Holsteins tested as low as 3.22 per cent fat in the summer, 3.36 in the fall, 3.54 in winter and about 3.44 in the spring. This data should help explain why tests go down during the spring and summer months.

Other factors are (2) temperature, with milk testing higher in coldest weather; (3) Stage of lactation with the test varying in the opposite direction to volume of milk produced; (4) Breed and individuality, there is an individual variation with a breed as well as breed differences. The fat content of the milk of a particular cow will follow the pattern of that cow. (5) Age of cow, the per cent of fat seems to decrease as cows advance in age; (6) Completeness of milking, since the last milk drawn is as high as seven times the first stream in per cent of fat; (7) Diseased udder or cows having mastitis have a lower percentage of fat than the same cows had when udders were healthy; (8) Differences in milking intervals. Long intervals between milkings give lower fat percentages than shorter intervals; (9) Exercising cows seems to increase the fat percentage, this may be a result of the production of less milk and is not recommended; (10) Per cent of fat can be increased by feeding certain fats and oils, however, the increased butterfat is not great enough to offset increased cost of production; (11) When in high flesh condition, cows produce milk with a higher per cent of fat than when they are thin; (12) Thyroxin injection, or feeding iodinated casein increases the per cent of fat in the milk of cows with lazy thyroid glands; (13) Excitement lowers the fat percentage.

Utah Extension Service

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County Bull Project

4-H, FFA and Vo-Ag youth get a chance to see how their stock rates in show and sale ring . . .

Condensed from National 4-H News

Harold D. Hurich

County Agent

WE HERE in Sublette County, Wyoming, believe in giving our young people every opportunity to develop know-how in special fields of the livestock industry.

Our ranches are 75 to 100 miles from the nearest railroad and about 250 miles from a central livestock market. Our county is devoted almost entirely to producing commercial beef on the hay and grass that we grow.

Since all feed concentrates would have to be imported for baby beef or steer projects in 4-H and FFA work, and no market is near, the growing out of bulls was a natural project.

The program started at a 4-H Club Leaders' Council meeting in September, 1948. Many leaders believed we could grow out good bulls and sell them to ranchers in our own area. A group of 4-H members was contacted to see if they would be interested, and they were.

To start the project, C. R. O'Neil, prominent rancher and 4-H Club leader, and the county agent went to Denver in January, 1949. They purchased 30 bull calves and trucked them to Mr. O'Neil's ranch at Big Piney. It was decided 4-H members should draw from a hat for their bulls.

To put the program on a sound basis, the State Bank of Big Piney agreed to loan money to boys and girls on their personal note to be paid back when their bull was sold. To protect the bank and members, each bull was insured to cover cost of animal and feed. The Big Piney Lions Club agreed to sponsor a bull show and sale, and named a committee to plan and conduct it.

Local 4-H leaders, with the assistance of the county agent, were to guide members in feeding and visit them from time to time for other assistance. Other help in fitting and training for the bull show was secured.

Reprinted from National 4-H News
59 E. Van Buren Street, Chicago, Illinois

The first show and sale held in October 19, 1949, disposed of 28 bulls at an average of $514.

Results were so encouraging that boys taking vocational agriculture were invited to join, and in 1950, fifty calves were purchased and handled the same.

In the second sale, 48 bulls entered by 43 boys and girls averaged $660.

The third year 49 bulls brought an average of $1,061. The grand champion shown by Betty Budd sold to George Franz for $1,800. Reserve champion, shown by Tommy O'Neil, was purchased by Dan Budd for $1,325. Bobby Noble of Big Piney was champion showman.

By 1952 the program had reached a point where it was decided to let the boys and girls purchase calves where they wished, and 59 4-H and FFA members started 86 head.

At the 1952 show and sale 76 bulls were sold for an average of $754, in spite of a falling cattle market. Grand champion was sold for $1,400. Reserve champion sold for $935.

Our 1953 program is a complete change, as all calves were purchased by the 35 boys and girls entered, and we hope to have 50 head to offer this fall at the sale.

This program has been of value in many ways. It has given boys and girls the chance to see how their stock rates in a show ring and sale. These are the last courts of judgment in a beef cattle project.

The youngsters also have had experience in backing their judgment against their dollars and have learned to value credit.

They have seen what it means to live in a community where others give them a helping hand.

They have gained a better understanding of the commercial cattle business developed by their parents and others after much hard work and the risk of their wealth.

Don't Pasture Dairy Calves

Don't put your dairy heifers on pasture too soon. They may not grow out properly if you do.

That's advice from George Parsons of Michigan State college. He says dairy heifers under 12 months of age should not be pastured. That means a calf born in January should not go on pasture that year.

When heifers are pastured, however, they should be near the barn where some hay and grain can be fed. Parsons points out that they need the best pasture—not the poorest on the farm.

Wildlife as a Managed Crop

The Chief of the Soil Conservation Service speaks out for a "co-ordinated, total resource-use program."

Condensed from Soil Conservation

Robert M. Salter

WILDLIFE is an important agricultural crop. Since the land that produces our food supports our wildlife, the technologies we use in management of our lands have a major bearing upon the size and quality of this wildlife crop.

Because so great a percentage of our land has been fenced and plowed, the farms and ranches of today comprise the country's principal wildlife habitat. *The farmer is our principal game manager.* Moreover, most of the water that supplies our lakes and streams, as well as a great deal of that which empties into the sea, drains from or across these same farm and ranch lands.

Since farmers and ranchers, as primary suppliers, will continue to have a great deal to say about hunting and fishing, their understanding of the importance of wildlife in our land economy is essential.

A basic tenet of the Soil Conservation Service program long has been that the conservation of soil, water, forest, grass, cultivated crops and wildlife must be tied together and scientifically co-ordinated on the basis of land capability and need. Encouragement of beneficial wildlife is an integral part of our soil conservation objectives.

Let's review some of the common soil and water conservation practices that are beneficial to wildlife by providing food and cover and general improvement of habitat. One of them is strip cropping, in which strips of tilled crops are alternated with strips of grass and legume crops. No less than seven and a third million acres already have been converted to this pattern of farming in soil conservation districts.

Another practice is use of cover crops, with some 20 million acres planted to a wide variety of legumes and other plants. Stubble mulching is in use on upward of 50 million acres in districts.

There has also been the sub-

Reprinted from Soil Conservation
Washington, D. C.

stantial development of farmland areas specifically for wildlife, through developments such as field borders, planting odd areas, and protecting and improving marshland areas more valuable for wildlife than for agricultural use.

Also important is the building of farm and ranch ponds, most of them primarily to provide water for livestock, supplemental irrigation or other farm needs, but with attention given by our technicians to fish production and wildlife use. The Soil Conservation Service alone has given technical assistance in the building of more than a quarter of a million ponds in the last 15 years. Many of them have created duck habitats where none existed before.

On many farms, water is being impounded on low, wet lands that previously were of little use either for wildlife or farm crops. A couple of hundred such impoundments in the Allegany Soil Conservation District in New York have proved their worth in attracting and sheltering waterfowl. One of them, a six acre marsh, produced three broods of mallards the first year and sheltered large flocks of migrating ducks and geese in the fall, in addition to attracting deer, raccoon and smaller wildlife.

A properly co-ordinated land-use program anywhere must of necessity take into account many factors besides merely the development and management of plow land and pasture. Thus, the service considers the conservation and improvement of the nation's woodlands to be an integral part of its co-ordinated program. Here, too, we approach the job, not as a primary forestry agency, but as a technical corps experienced in evaluating the capabilities of the land and in assessing the resources and requirements of the farmer.

Part of our job is to encourage the landowner's appreciation of his woodlands in his over-all farm operation, and to help guide him in doing what is needed to protect, maintain and utilize the woodland correctly. That is, not for wood products alone, but also for watershed protection, erosion control and wildlife habitat.

Our vast acreages of native grasslands, or range land, likewise are of such major importance in our agricultural economy that they require a proportionate share of our attention in developing the nation's co-ordinated soil and water conservation program. Here, of course, the primary objective is the improvement and maintenance of forage for livestock so essential to supplying us with meat, wool and leather. This same land, however, must support an important share of our wildlife. The job is to see to it that the needs of both domestic livestock and wildlife are met and soil

moisture conservation problems solved.

Experience has shown that this can be done effectively through range improvement and management practices that result in more grass for better feed and ground cover, and development of adequate water supplies. Taking unsuitable lands out of cultivation and seeding them to grass, or planting them to trees, and discouraging the cultivation of grass and forest land not suitable for cropping, also has helped immeasurably to improve the conditions for the perpetuation of wildlife.

The wildlife benefits accruing from tree planting and farm woodland management are well known. The forestry part of soil conservation district programs to date has included close to a million acres of conservation woodland management. Meanwhile, range and pasture improvement, which improves food, cover and water for wildlife, has been applied on 78 million acres in districts; and range and pasture seeding has totaled 12¼ million acres.

Watershed development and upstream flood prevention work is a growing and important field of conservation of great interest to all who are concerned with improvement of our renewable natural resources. Watershed treatment includes, in addition to conservation farming, range management and forestry measures, many works of improvement, such as small floodwater retention dams and reservoirs, diversions, and channel stabilizing structures.

Drainage of wet lands is a conservation practice about which there has been some difference of opinion between soil conservationists and wildlife conservationists. There are approximately 100 million acres of wet lands including marshes, swamps and small water areas in the United States at present. Much of this acreage is intermingled with drained land on thousands of farms scattered throughout the country. Estimates made from surveys by the Soil Conservation Service indicate that not more than one-fifth of the acreage of wet lands is suitable for cropland or for pasture either because the soil is unproductive or it is uneconomic to drain the land. We know that much of this latter area can be improved for waterfowl and furbearers; and it is our policy to encourage such development by the owners.

Most of the drainage that has been done by farmers and ranchers with technical assistance from the Soil Conservation Service has been accomplished by tiling and open ditches on cropland and pasture. Less than one per cent of the seven and a half million acres total drainage with which the Soil

Conservation Service has assisted has affected swamps, marshes, or open water areas of any conceivable value to waterfowl.

There is, of course, some land to be found on farms now being operated where drainage is necessary to improved economic operations. Such an instance in Maryland was the subject of that state's winner in last year's soil conservation district speaking contest. His farm is in the swampy area of southern Maryland. Fields once farmed have turned to swamp because of silt deposits resulting from top soil eroding from the higher land in the watershed. His richer deposits of wealth lie locked away in the swamps. He needs to get his land drained for economic production. I'm sure that wildlife conservationists understand his needs and want to see his drainage problem worked out. I believe it can be worked out without sacrificing wildlife.

Wildlife conservationists have also been concerned about pothole drainage in the Dakotas and Minnesota. Here, without doubt, there is a conflict of interest between the farmer and wildlife conservationists.

This problem has come about because of progress in modern agriculture. Years ago the potholes were difficult and costly to drain. Working around them with horse drawn machinery wasn't too bothersome. Now, machines have made it relatively easy to drain the potholes at relatively low cost. With the mechanization of agriculture, the pot-holes have become a bigger nuisance to the farmer. Farmers get stuck with tractors where they didn't with horses. Consequently, there has been recent increased interest in pot-hole drainage.

I believe there is a need for helping farmers to recognize fully the wildlife values of potholes. The farmers who own the land are the ones who need to be convinced. Decisions to drain are private decisions. We believe that if farmers have full information on the wildlife values of pot-holes, many would be willing to make the economic sacrifice and put up with the inconvenience necessary to leave them. Getting this full story to farmers is a challenge to wildlife conservationists.

There is no conflict in thinking when it comes to such operations as tile and other field drainage for wet crop or pasture lands or rehabilitation of old ditch drainage systems. And when the landowner wishes to explore the possibilities of draining marshes, swamps or areas of open water, Soil Conservation Service technicians are guided by careful use capability surveys that indicate soils which might be more useful for wildlife habitat than for agricultural purposes.

It is also service policy, as a further safeguard to all interests concerned, to draw upon, in addition to its own engineering and other technical facilities, the advice of the Fish and Wildlife Service and the state wildlife agencies before detailed plans are prepared for drainage of swamps, marshes and areas of open water.

It is only when wildlife conservationists and soil conservationists both work with farmers that it is possible to arrive at adequate information on the effect of any proposed drainage on both the land and wildlife and to bring to the attention of soil conservation districts and individual farmers the facts necessary to insure consideration of wildlife in the proper use and treatment of the land.

While the Soil Conservation Service is trying to do all it can to protect and improve wildlife on the farms and ranches of the United States, technical assistance in conservation cannot fully dissolve the conflict of interest between farmers and wildlife conservationists. In fact, I doubt whether the conflict can be totally resolved without a more intensive effort to develop greater farmer appreciation of wildlife, and without methods for compensating farmers for hunting and fishing privileges.

Many farmers tell us that one of the satisfying results of practicing soil and water conservation farming is the restoration of even better game than originally inhabited their farms. It is something they can enjoy and share with others.

Direct returns from their increased wildlife have been realized and welcomed by many conservation farmers over the country. These range from fish and game for the table to revenue from furs, fish, and hunting and fishing leases.

Soil conservation districts constitute an ideal focal point for bringing to bear the co-operative efforts from many sources that are necessary to meeting the problem of increasing production of beneficial wildlife on American farm lands. These districts have obtained co-operation in these efforts from the Fish and Wildlife Service, state game departments, agricultural experiment stations and other agricultural agencies and leaders, sportsmen's organizations and wildlife conservation groups, and other interests, including schools and youth organizations. Through the Pittman - Robertson wildlife habitat improvement programs, for example, 35 states now are providing assistance to soil conservation districts.

The support and co-operation which wildlife conservation groups have given soil conservation districts in the past have been most substantial, indeed, and have gone

far in helping the districts to show the way to greater wildlife abundance through soil and water conservation work on the country's farm and ranch lands. The opportunities for continued and expanded teamwork in this field are virtually unlimited. The whole, broad conservation job ahead depends for its successful advancement and completion upon the efforts and contributions of many people and interests working together. The goal is a co-ordinated, total resource - use program that benefits the entire nation, as a basis for building for future welfare and national security.

Warns of Corn Storage Shortage

Farmers can lose millions of dollars this fall unless they provide storage for cash corn, an extension economist has warned.

L. E. Folsom, Ohio marketing specialist, said conditions similar to those in wheat prices and storage "will be repeated for corn unless immediate action is taken." June wheat prices reached the lowest point since 1945.

They were at least 60 cents below Commodity Credit Corporation loan values. Commercial storage was not available and many farmers failed to provide on-the-farm storage. Support loans were not as effective in stabilizing the market as they could have been, Folsom said.

The wheat crop last year was third largest in the nation. The corn crop was the second largest in United States history.

Wheat exports dropped last year. Although corn exports were at a record high, fewer corn-consuming animals and a mild winter reduced domestic corn consumption.

Folsom described the result as "the second largest carryover of wheat—575 million bushels—and an expected third largest corn carryover—800 million bushels. Total carryover of corn and wheat promises to be 1,375 million bushels. Previous high was 1,265 million bushels of 1949 crops.

Space normally available for corn storage is filled with wheat. On May 15, fourteen times as much corn was under CCC loan and purchase agreements as at the same time last year.

Folsom suggested: Corn to be fed may be stored outside in temporary structures. Cribs may be held open for storing cash corn. Farmers may shell last year's corn and store it in bins—releasing cribs for new corn. Farmers who have feed corn held over from last year probably will have to arrange for more storage.

Ohio State University

New Insecticide for Home Gardens

Condensed from The Southern Planter

Dr. George S. Langford

A NEW insecticide called Malathon promises to make the unpleasant task of fighting bugs easier and safer. Its performance as an insect killer has given it a prominent place among the so-called wonder pesticides, such as DDT, lindane and parathion, as well as the old standbys—pyrethrum, rotenone and nicotine.

Research workers in all parts of the country are reporting phenomenal results from its use. Dr. L. P. Ditman of the University of Maryland, who has made an intensive study of many chemicals for the control of garden insects, says, "In my opinion it is one of our top insecticides."

Most home gardeners like to use insecticides that kill the insects but, at the same time, offer safety when used around the home. Malathon seems to have both of these qualities.

Parathion, a phosphorus base insecticide, is probably our most effective all-around insecticide, but because of high human toxicity it requires special precautions in handling. For that reason it is not practical for the home garden. Malathon is related to parathion and offers many of the same effective insect killing qualities, but differs in that it has a very low degree of toxicity to warm blooded animals. It is one of the safest insecticides to handle.

The insects usually found in every garden and which Malathon will kill include: The Mexican bean beetle, which attacks all sorts of beans; cabbage worms, which eat cabbage, kale and collards; the Japanese beetle which is extremely fond of sweet corn, pole beans, okra and many ornamental flowers, trees and shrubs. In addition, it kills sucking and rasping insects such as aphids, plant bugs and thrips. Equally important is its effectiveness for killing spider mites which are so destructive to many garden crops, boxwood and ornamentals of various kinds.

Dosages at which Malathon

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Richmond, Virginia

should be used must be varied depending upon the pest to be killed. For most insects, it may be used as a four per cent dust at rates of 40 pounds per acre, or as a spray at the rate of one and a half pints of the 50 per cent emulsified liquid in 100 gallons of water. Package labels carry information for the dosages required for controlling different pests attacking flowers, ornamentals, fruits and vegetables.

Malathon is now available under many brand names in farm and garden supply stores. In most instances, Malathon will be the only insecticide ingredient in the package. In others, it will be mixed with other insecticides or fungicides to satisfy broad pest control requirements of the many different crops normally grown in the home garden.

In using Malathon one should always remember that it is an insecticide and should be handled with caution. When compared with most other insecticides, it is safe, both for the user and the plants. Yet it can be hazardous if swallowed, inhaled or absorbed through the skin. The user should read and follow all danger cautions given on the package label. When used on vegetable crops, spray or dust applications should not be made later than 10 days before harvest.

Antibiotics Show Promise for Plant Disease Control

U.S.D.A. experiments at Beltsville, Maryland, indicate that bacterial diseases of plants may be controlled in the near future by antibiotic sprays.

In greenhouse experiments and field trials at the station, halo blight, a common bacterial disease of beans, was successfully stamped out by applications of streptomycin sulfate. It remains only to find a means of using the antibiotic in a crude state rather than in its expensive, purified form to make this method of control practical for farm use, say Beltsville scientists. Recommendations for general use should be ready within the next year or two.

In the Beltsville experiments, streptomycin sulfate was applied to the stems of the plants. The antibiotic was absorbed by the stems and moved upward to near-by leaves in sufficient amounts to protect them from the halo-blight bacteria. No evidence was found that the antibiotic entered the pods, or edible portions of the plants.

Further research on the use of antibiotics in sprays and dusts for control of plant diseases is planned by the U.S.D.A. scientists.

Farm and Ranch News

Pioneer Quail Breeder

They said it couldn't be done. Now, he markets 3,000 quail a year . . .

Condensed from New England Homestead

R. Zagoren

QUAIL were disappearing from the countryside. The sweet whistled "bob white," once the voice of every meadow and field, was almost silent. The few left were pursued indefatigably as the number of hunters kept increasing.

There seemed only one way to save Connecticut's quail and that was by breeding and raising them; much as chickens are raised. Some 25 years ago when Randolph Hayden of Haddam, Connecticut, suggested this, he was told such a project was impossible . . . it could not be done. He already had tried his hand at raising pheasant and found success there. Surely, he reasoned, he could do as well with quail. At least he wanted to try.

He got a pair of quail and that first season produced 70 chicks from one pair. This initial success gave him confidence. Who said quail couldn't be raised? So the second year he produced 500 chicks. But he couldn't raise them; something happened, and one by one they died. The third year he again produced 500 healthy chicks and once again they died. Searching for his trouble, he realized that large numbers of quail confined in pens raised a sanitation problem. By walking in their own droppings, the young birds caught quail disease—ulcerated enteritis, an intestinal disease. Mr. Hayden realized he would first have to conquer this problem before he could raise large numbers of quail successfully.

Wasting no more time, Mr. Hayden quickly built pens with wire floors. There was no commercially prepared feed available, so he mixed his own quail food, experimenting with different protein ratios. He used beef scrap, fish meal, dried milk, corn meal, bran, ground oats in an attempt to get a high protein food for the birds, for when the protein content wasn't sufficient he noticed

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Springfield, Massachusetts

the birds did not develop properly.

His fourth year as a breeder of quail was successful and this time it wasn't just beginner's luck. The struggles and long hours already spent were the groundwork of the coming quarter century of quail breeding, and Mr. Hayden is now considered one of the most experienced and successful quail breeders in Connecticut and possibly in the country. At present his quail farm is the largest private one in New England. Now 3,000 quail are a normal number for him to produce and market in one season. His Beaverbrook Game Farm is known throughout the country, for many of his customers are from the south and southwest.

Quail is the game bird extraordinary. Wherever staunch dogs are called to show their training, quail is their quarry. Consequently field trial clubs, shooting preserves and conservation clubs are among Mr. Hayden's customers. Southern breeders of quail like to cross their smaller native bird with the northern quail; they buy from Beaverbrook Game Farm. And then, too, the quail is popular with gourmets. One New York city man annually purchases 1,000 birds for the table. The meat of the quail is a signal delicacy.

The quail is a small bird. At its adult largest, it weighs in at a scant eight ounces. The chicks, hatched from incubated eggs, are only one-third the size of baby chickens. After 23 days in the incubator the quail chicks spend their next five weeks in brooder pens. These quarters for the 250 chicks that are hatched weekly through the season are kept at 100 degrees F. by thermostat control. From these brooder pens the quail chicks go into holding pens where they stay till they are 16 weeks old or until they are sold. By the end of December all of Mr. Hayden's quail are sold.

Mr. Hayden designed and constructed all of his brooding and holding pens. He built them with an eye to efficiency; each pen can be taken apart. This means greater cleanliness, since the disassembled pens can be put outside in the sun where Mr. Hayden uses a spray gun filled with disinfectant on them. Besides he did all the electrical work on the pens: Wired the hovers which can be lowered to within six inches above the chicks in the brooding pens; these are wired in such a manner that the heat, controlled by thermostat, is evenly distributed.

Cleanliness is a byword at Beaverbrook Game Farm, for Mr. Hayden has never forgotten his early experiences. As soon as a batch of chicks is removed from the brooding pen, that pen is taken outside for disinfectant and sun. The floor beneath the pens is scrubbed with disinfectant also,

even though the chicks never once touch the floor, since they are raised on wire.

Each April the quail raising season begins. At that time Mr. Hayden has only his breeding stock which consists of at least 150 pairs of adult quail. The female begins laying eggs in the early spring and continues until August. A good quail hen will lay between 60 and 100 eggs in one season, though a few have been known to lay 120.

To improve his stock, Mr. Hayden practices selective breeding. He keeps records on egg production, hatchability, and livability. Breeding birds are kept in pairs. Should one get out, he leaves its mate out too. These freed quail breed in the land around the Beaverbrook Game Farm. On occasion some of these quail, free from confinement, visit the Hayden's back yard. These freed quail are the ones that provide Mr. Hayden with his own shooting.

Although quail breeding is a science with Mr. Hayden, weather is still the variable, uncontrolable factor. Damp rainy weather makes the hens lay fewer eggs; rainy cold weather can delay his operations by a whole month. On the other hand, scorching suns can prostrate the young birds in the holding pens. When the sun is blistering, he throws a thatch of hay on the wire above the birds to afford a little shade.

Long-Run Cattle Prices Not Apt to Improve

Substantial improvement in cattle prices is not expected in the next two or three years, says Harold Riley, Michigan agricultural economist.

The reason, he believes, is that beef supplies are likely to continue larger. At present, he adds, the price outlook for lower grades of slaughter cattle doesn't look favorable for the seller. Continued price weakness is expected and marketings are likely to be unusually large this summer and early fall.

Reasons for the price weaknesses, for stockers and feeders, he asserts, are these: (1) The increased supplies—the seasonal movement of grass cattle and those cattle coming from drouth-stricken areas. (2) The weakened demand — the general fear of late summer and fall prices on grass cattle, restrictions on cattle loans and the losses by cattle feeders during the past several months.

The relatively unfavorable price spread between feeders and fat cattle and the current pressure of field work is keeping farmers away from the market, too, Riley says.

Calves Die on Vegetable Fats

In Minnesota experiments, vegetable oil or fat replaced butterfat in calf rations. Here is what happened . . .

Condensed from Guernsey Breeders Journal

T. W. Gullickson

THE following is a summary of experimental work at the Minnesota Agricultural Experiment Station during the past 15 years relating to the nutritive value of various vegetable fats as compared with milk for young dairy calves.

The initial experiment was undertaken for the purpose of finding out if some cheap vegetable oil or fat could satisfactorily replace the butterfat in whole milk for the production of choice veal. In the first trials, a high grade soybean oil was used. It was added at the rate of 3.5 pounds per 96.5 pounds of skimmilk and the mixture homogenized to form a filled milk containing 3.5 per cent fat. This product, supplemented with vitamins A and D, was then fed in the usual quantities to healthy calves starting when they were about two weeks old. All of these calves died within a few weeks after being placed on such a diet.

These results raised a question in regard to the possible nutritive value of other vegetable fats for calves and indicated the need for further study. Since that time the following vegetable oils and animal fats have been tested in the same manner in feeding trials with groups of calves: Corn oil (mazola and amaizo), cottonseed oil (Wesson oil), coconut oil, peanut oil, lard, beef tallow and butterfat. Also a no-fat diet was fed to one group of calves.

In these trials only calves that were healthy and thrifty were used. They usually were fed whole milk (colostrum first day or two after birth) two weeks after which they were shifted gradually to the desired fat filled milk. The rations in all cases were supple-

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Peterborough, New Hampshire

mented with adequate amounts of vitamins A and D and essential minerals. Hay and concentrates usually were not fed until calves were several weeks old and in some cases not at all. Invariably under this plan of feeding all calves fed the vegetable fat filled milk ration died within a comparatively few weeks after being placed on such diets.

Calves fed vegetable fat filled milk generally made fair gains in weight for several weeks to a month or more after being started on the diet. This was followed by a period of no gain and this in turn by a rapid loss in weight terminating in death. Affected animals during the later stages appeared thin and emaciated with rough and unkempt hair and some of them also showed a characteristic acrodynia, or loss of hair, the area about the face, ears and neck being first affected. Some calves in the advanced stage of the snydrome have been restored to normal simply by shifting them to a normal whole milk diet.

It is significant that the groups of calves fed the lard and tallow filled milk had a better appearance and made more satisfactory gains in weight for a longer period of time than those fed the vegetable fat filled milk. Eventually, however, some of them showed some of the same symptoms exhibited by the latter. Calves fed the "skimmilk" or no-fat ration on the other hand remained normal in appearance throughout the 90 days or more they were on experiment. They did not, however, have the characteristic sleek well-fed appearance of calves fed whole milk.

During the progress of the experiment, the effect of adding various supplements to the vegetable fat filled milk diet has been studied. Among the more important supplements so tested besides those already mentioned are the following: Vitamin B12, streptomycin, paper pulp, alfalfa hay, grain, alfalfa hay and grain, lecithin, B-complex vitamins (high level), liver extract, aureomycin, tocopherol, sodium acetate and choline. It is noteworthy that none of these supplements either alone or in different combinations have been wholly effective in preventing the onset of the syndrome and the ultimate death of calves fed vegetable fat filled milk.

Feeding of B-complex vitamins at a high level appeared to lengthen their life span in some cases, and this was also true when mixed tocopherols were provided. Also it was found that so long as calves persisted in consuming large amounts of hay they remained normal, however this condition seldom persisted beyond the age of 90 days. The beneficial effects from replacing various proportions of the vegetable oil

with butterfat has also been demonstrated. In general, the physical well being of the calf under such conditions has varied directly according to the proportion of butterfat present in its ration.

Results in brief have shown that in many cases hemoglobin levels in calves on a vegetable oil diet (corn oil) are in the anemic range. There also appears to be a tendency for the white blood cells to progressively decrease in such calves. Also gross post mortem examination of such animals has revealed white patchy areas in skeletal muscles, fatty livers and enlarged flabby hearts. and histological studies have disclosed lesions in striated muscles as well as cardiac lesions. In addition to this, electrocardiograms on affected calves have revealed what appears to be heart bloc and arrhythmia in several cases. To date sufficient data have not been accumulated to definitely ascertain whether or not any form or means of tocopherol (vitamin E) supplementation will prevent the development of these conditions. Other factors undoubtedly are also involved in producing the characteristic syndrome.

Horn - Fly Control

Experimental results with different insecticides used with back-rubbers indicate that horn flies, which have built up a resistance to DDT, can be successfully controlled.

R. E. Roselle, Nebraska extension entomologist, says tests conducted in the Sandhills with range cattle, indicate that five per cent toxaphene, dilan or methoxychlor, applied to back-rubbers, will give good control.

The dilan and toxaphene should be used only on adult cattle, which will not be slaughtered within 30 days, says Roselle, since there is a small amount of "buildup" of the chemical in the animal's body. On small calves, milking cows, and cattle to be slaughtered within 30 days, methoxychlor can be used, and it will give equally good results. However, methoxychlor is more expensive than the other chemicals.

Where flies have not built up a resistance to DDT, the insecticide is still recommended. It is the cheapest of the chemicals. It, too, is used at a five per cent strength on back-rubbers. The insecticides can be mixed with fuel oil, and should be applied to the rubbers about every 10 days to two weeks.

He Grows His Tuition

When it's time for college, Don Britt will have the money—thanks to his vegetables

Condensed from Farm Journal

Robert A. Wesselmann

NOT many boys are paying their way through college while they're still in high school.

That's what Donald Britt, a 16 year old 4-H boy in Genesee County, New York, is up to, though. He's doing it by growing vegetables for a cannery.

In 1950 he raised 5.8 acres of tomatoes. His net profit after all expenses, except his own labor: $2,211. In 1951 he expanded his operations, netted $991 on 5.8 acres of beets, and $1,395 on five acres of tomatoes. His total for the two years: $4,957.

Last summer, though, Donald hit a hard luck season. A severe drought wrecked his tomato project, and an early frost spoiled a crop of string beans. He had some wheat, however, and he made enough on that to break even for the year.

"It's proof that a farmer better not put all his eggs in one basket," Donald says.

Before starting in the truck crop business, Don went to both the Genesee County Farm Bureau and the New York Experiment Station at Geneva for recommendations.

He followed to the letter the suggestions received from these two sources. And as a result, he won top honors in the state 4-H canning crops contest two years in a row.

Each year he plowed under sweet clover before setting out his high yielding Red Jacket tomato plants. Before sowing his beets, he plowed under rye grass for needed organic matter.

His father charges him $12 an acre rent for the land — he pays cash, too, for his fertilizer, spray materials and other supplies.

Although Don could "retire"

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Philadelphia, Pennsylvania

now, he plans to continue his farming projects this year and next—until he enters college in September, 1954.

He hikes home from high school and gets in two hours of work per day for dad on school days—and then puts in almost full time on the farm during summer. His dad lets him use the farm machinery on his projects in return for his summer work.

Now and then, when work on the home farm isn't too demanding, he does some custom work for other farmers in the area.

This income goes into the bank along with his beet and tomato profits. Looks like Don will have the tuition problem about licked by 1954.

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A world record price of $3.98 a pound for lamb's wool was paid for one bale (300 pounds) of superfine grade at Geelong, Australia, wool auctions recently.

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Exports Expected to Be a Fourth Less Than Last Year

United States agricultural exports are continuing to decline and are expected to total at least one-fourth smaller in 1952-'53 than in the preceding year. This information, says C. H. Bates, Texas farm management specialist, comes from the U.S.D.A.

Exports for April, the most recent month of tabulation, were 11 per cent below those for March. The total exports in April, 1953, were $223,535,000 compared to $296,785,000 for the same month in 1952, says Bates. Among the commodities showing the greatest decrease last April were cotton, wheat and rice. Butter, pork, lard, dried eggs and apples were also listed. Bates points out that this continuing drop in agricultural exports presents an important problem to the economy of the country because this nation normally exports the products from about 50 million acres. Estimates now being made indicate that total exports during 1952-'53 may fall short of three billion dollars, compared with approximately 4.1 billion in 1951-'52.

The export decline, according to the specialist, has been attributed primarily to scarcity of dollars abroad, increased agricultural output in foreign countries and restrictive trade barriers. Plans for checking the drop in farm exports and bolstering foreign outlets for agricultural products are receiving major Department of Agriculture attention. The solution of this situation, says Bates, would be a big step forward in solving the surplus problem which is bringing back into the agricultural picture control programs. *Texas A & M*

Feeding Efficiency in Broilers

Here are some pointers on how to get more meat per pound of feed . . .

Condensed from American Poultry Journal

James Dalton

CONVERSION of feed into meat is the important factor in the broiler business. The more efficiently we convert feed into meat, the better off we are. But before we proceed, it may be well to explain how we measure feed efficiency. Feed efficiency is measured by the pounds of feed required to produce one pound of broiler meat. To obtain this figure, divide the total weight of broilers sold into the total weight of feed used.

Just why is feed efficiency so important? An excellent illustration of the importance of feed efficiency is the accompanying table which was presented by the University of New Hampshire.

If you will study the table, you will see the importance of feed efficiency. Based on the price of feed at $5.50 per 100 pounds the feed cost goes up $33 for each 1,000 three-pound broilers for each 0.2 pound increase in feed required. You can see from these figures how an improvement in feed efficiency as little as 0.2 of a pound can make a difference in net income of over three cents per bird when feed is $5.50 per hundred.

What are some of the things we must do to improve our feed efficiency? The first factor which influences the feed cost per pound of broiler meat produced is the breeding of the chicks placed in the broiler house. If you want good feed efficiency, you must buy quality broiler-bred chicks.

Secondly, you must supply these chicks with a good nutritious and efficient feed if you are to produce a pound of broiler meat at the lowest feed cost. The efficiency of the feed is very important. Incidentally, you shouldn't judge a feed by its cost per pound. The cheapest feed in producing a pound of broiler meat may be the most expensive feed as far as cost per pound is concerned. The feed manufacturers as a whole have done a fine job in producing high quality broiler rations.

Another very important factor in determining the feed cost per

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Chicago, Illinois

pound of broiler meat is management. The first rule in good management is to have all equipment ready for the chicks when they arrive. Adequate feed hopper and watering space should be provided. Recommendations for feeding and watering space are as follows: Feeding space — day old through two weeks — 100 linear inches per 100 chicks; three weeks through six weeks — 175 linear inches per 100 chicks; seven weeks through 12 weeks — 300 linear inches per 100 chicks. Watering space: Day old through two weeks — 20 linear inches or two one-gallon fountains per 100 chicks; three weeks through 12 weeks — 40 linear inches or two three-gallon fountains per 100 chicks.

Feeders should be filled only one-third full, to prevent feed being billed out of feeders by the birds. Feed the birds often, however, to stimulate them to eat. Also, keep the feeders level with the height of the birds' backs. This will prevent any expensive waste of feed caused by the birds scratching or billing feed into the litter.

Waterers should be kept close to the feeders and likewise kept at the same height as feeders.

Adequate floor space is essential if maximum efficiency of feed conversion is to be obtained. Not less than three-fourths square foot and preferably one square foot of floor space should be allowed per bird.

For maximum feed efficiency, mortality must be controlled, especially as the chicks grow older. Losses of chicks the first few days of life do not materially influence feed conversion, but such losses do reduce profits. Mortality in older birds cuts both profits and feed efficiency. A bird eight weeks of age will have eaten about 30 cents worth of feed.

A record of daily feed consumption is important. Such a record will show if feed consumption drops. And if it does, you know that something is wrong and can take steps to correct it.

Feed Cost per 1,000 Three-Pound Broilers

Feed Efficiency	Price of Feed per 100 Pounds						
lbs. feed/lb. gain	$4.50	$4.75	$5.00	$5.25	$5.50	$5.75	$6.00
2.0	$270.00	$285.00	$300.00	$315.00	$330.00	$345.00	$360.00
2.2	297.00	313.50	330.00	346.50	363.00	379.50	396.00
2.4	324.00	342.00	360.00	378.00	396.00	414.00	432.00
2.8	378.00	399.00	420.00	441.00	462.00	483.00	504.00
3.0	405.00	427.50	450.00	472.50	495.00	517.50	540.00
3.2	432.00	456.00	480.00	504.00	528.00	552.00	576.00
3.4	459.00	484.50	510.00	535.50	561.00	586.50	612.00
3.6	486.00	513.00	540.00	567.00	594.00	621.00	648.00
3.8	513.00	541.50	570.00	598.50	627.00	655.50	684.00
4.0	540.00	570.00	600.00	630.00	660.00	690.00	720.00
Avg. increased cost for each 0.2 increase in feed required	$ 27.00	$ 28.50	$ 30.00	$ 31.50	$ 33.00	$ 34.50	$ 36.00

Sarcoptic Mange

How to diagnose it . . .
How to treat it

Condensed from The Hereford Journal

Dr. J. W. Bailey

SARCOPTIC mange in cattle is caused by a mite so tiny that a microscope is needed to see it. It has been known to spread to horses and other kinds of livestock, and human being may be affected after handling infected animals. Mange attracted quite a bit of attention in the United States at the time of World War I, and a widespread campaign of eradication seemed to bring it under control for several years. However, many signs indicate that it is again becoming a serious problem for cattlemen in many sections.

The most striking symptom is the intense itching caused by the mites as they burrow in the outer skin layers. Animals are almost frenzied in their efforts to rub, scratch and lick themselves at times. Multiplication of the mites soon results in bald patches and large amounts of filthy dandruff on the hides of affected cattle, with the skin often becoming greatly thickened. Advanced stages usually show the skin bare of hair, and hard, dark and leatherlike over large areas, especially around the rump, along the neck and over the shoulders. Constant rubbing and scratching helps to cause the large scale formation of scabs, raw sores and bloody crusts on the bodies of affected animals. Varying degrees of infestation are responsible for decreased milk production, breeding troubles, loss of weight and even death of animals. Being highly contagious, the disease is likely to spread through an entire herd once it gets started.

The infection disappears with the coming of spring and shedding of winter coats, for the mange mites can't stand sunshine. However, a few of the parasites hide out during the summer on the bellies and less exposed body areas to start trouble again when conditions are right for their multiplication the next winter. Once established in a herd, mange is likely to appear year after year unless something is done to destroy the mites. Younger animals are usually the worst affected,

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Kansas City, Missouri

since older animals often have increased resistance due to an earlier attack of the disease.

The old method of treating mange consisted of spraying, dipping or painting animals with lime-sulphur mix, with treatment being repeated several times at 10 day intervals. Although effective, it was time consuming, so in recent years it has been largely replaced by newer drugs that require only one application for destruction of the mites. There are several of these, including lindane, benzene hexachloride and Chlordane. However, they can't all be used on dairy cows, and there are often regulations governing their use on beef cattle. Accordingly, you'd better check with your veterinarian or county agent before deciding which one to use on any of your animals that happen to be affected. Regardless of the treatment used, it must be applied to all parts of the body or some of the mites will be missed so trouble is started all over again later on.

You won't be able to look at an animal and decide whether or not it has mange, since a definite diagnosis is made only with a microscopic examination of the skin scrapings that reveals the mites. Appearances don't mean much, for mange often looks much the same as ringworm, X disease, lousiness, allergies, bacterial infections due to filth, burning by dips, and various other troubles. Accordingly, you may not be able to decide whether your cattle have mange or not, and under such conditions it will probably pay you to call in your local veterinarian so a definite diagnosis can be made.

Newly Combined Grains Dangerous for Poultry

Newly combined wheat and oats is blamed as the cause of digestive disturbances and the disease called bluecomb in poultry. At harvest time, many experienced poultrymen take special precautions to prevent their chickens from eating an excess of newly combined grains.

However, this grain can be used in limited quantities. The easiest way for most farmers to avoid trouble says J. H. Claybaugh, extension poultry husbandry specialist, is to keep their old hens confined to the laying house and their pullets on the range. If the hens must be allowed to range around the granaries, the time should be limited to a short time during the late afternoon.

Raising Heavy Roasters Without Heavy Overhead

Careful feeding and close attention to details help this poultryman produce 30,000 roasters a year . . .

Condensed from Everybodys Poultry Magazine

Charles L. Stratton

WHEN poultrymen think of large flocks, they are inclined to picture high overhead in the form of large payrolls and a lot of expensive buildings. But it doesn't work out that way for John Giberti, Lakeville, Massachusetts. He threw poultry growing customs out the window and, devising his own system, raises 30,000 roasters annually without benefit of expensive henhouses, running water, grass ranges, and hires only one man.

The year starts for this poultryman in January with 16,000 day old broiler-cross cockerels. Under his setup he prefers not to hatch his own chicks as he figures it wouldn't pay. Giberti doesn't skimp on buying chicks. He buys the best obtainable. After a series of tests on his own farm, he discovered one breeder's birds put on an extra pound with the same amount of feed in the same period of time. This discovery makes Giberti dollars ahead when it comes to selling off his birds.

Two flocks are handled annually to make a total of 30,000 birds. The January flock is sold off liveweight to the dressing plant from the middle of May to June 1st. His second batch of day old chicks arriving in June are ready for the market around the middle of November. He finds the fall bird is slower growing. As a result, he holds the females over another month to put on extra weight.

The only permanent poultry buildings on the Giberti farm are the two inexpensive 120 foot plain brooder houses. Giberti starts 1,000 chicks to the pen, 16 pens in all, under common coal stoves. This type stove may take a little more work and time, but according to Giberti who has tried them all, they throw the heat, pens are dryer, circulation is better, and it's easier to keep room temperature.

As soon as the weather is right,

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Hanover, Pennsylvania

Giberti spreads out the flock by moving some of the birds into the 24 shelters or "tarpaper wind breaks" as he calls them. These are inexpensive and have wooden floors covered with one inch of cement to make them draft free and easier in cleaning. The shelters are arranged conveniently on a 20 acre range shaded by pines, and haven't been moved for a number of years. The birds remaining in the brooder houses share the same range.

This range is somewhat unusual. Giberti claims his grain fed birds are just as good as any grass fed bird. The entire range has a light, sandy soil and is void of grass. Due to the shade of the pines, his birds are not bothered by the summer heat. This range has been used since 1944 without sign of a disease outbreak. The soil has something to do with this. Giberti claims all droppings and dirt soak down into the spongy soil during a rain. After a good soaking shower, one would never know chickens were using it.

The birds get plenty of fresh water on the range. The water is drawn from a deep artesian well and carried the short distance to the range on a truck in covered barrels. Piping would be quicker but the water would get hot in the sun, unless the pipes were covered.

Giberti keeps growing and broiler mash before the birds all the time. As the birds grow older, scratch grain is fed in the late afternoon. The amount is estimated as "all they can eat in half an hour." A few dippers are saved until the following morning to start the day right.

They get plenty of semisolid buttermilk placed at intervals about the yard. Giberti feels these appetizers do a mighty fine job in shaping up the birds. His entire flock eats about a barrel of it a day.

About six weeks before selling, the roasters get a hormone pellet injection. The last three weeks Giberti goes easy on mash feeding and pushes extra heavy with the hard grain as he figures they are already loaded with vitamins. He allows an additional quarter hour of feeding.

It doesn't take too long to handle a large flock under Giberti's system. It requires approximately a half day to feed and water, nearly an hour in the afternoon to feed scratch grain, and around one and one-half hours at night to shut all the brooder houses and shelters. As on most well managed poultry farms there is always plenty to do. Giberti hires one good man to help him, one that isn't afraid to work.

Two flocks a year, inexpensive shelters, and a continuous, close watch over all his birds is how Giberti handles 30,000 birds with a minimum amount of overhead.

Breed Good Beef Cattle

How to use the tools of breeding to develop a profitable herd . . .

Condensed from The Michigan Farmer

R. H. Nelson

BREEDING superior beef cattle is a challenging objective. No system of selection or mating guarantees the production of a superior individual. Beef cattle improvement depends on both the breeder's ability and the laws of probability or chance.

Therefore, a working knowledge of the fundamentals of heredity is needed if the beef cattle breeder hopes to have the greatest chance of success. He has just three tools that he can use to bring about beef cattle improvement. They are selection, inbreeding or linebreeding and outcrossing. However, it is not the system of breeding itself but the ability of the breeder both in selection of breeding cattle and in choosing the right system of mating that will determine his ultimate success.

Five Objectives

There are five important objectives toward which beef producers should be breeding. All should probably receive about equal attention. These are:

1. Type — not only beef type and breed type but all other things which add to utility or usefulness for breeding purposes. As long as quality beef sells at a premium, beef type is an important objective in any breeding program.

2. Regular reproduction—cows of high fertility that are sure breeders mean a larger calf crop and for the commercial producer a calf crop that will be dropped over a shorter period of time.

3. Acceptable weight or size for age—not too large and coarse nor too small and fine. Rapid growth and early maturity are possibly somewhat antagonistic to one another in selection, making it impossible to have a maximum of both. If this is the case we will have to be satisfied with some-

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thing less than the fastest growers to get desired early maturity, early maturity here meaning the ability to fatten at a relatively young age.

4. Cattle that make efficient use of feed in the feed lot—thrifty cattle. Selecting and breeding rapid growing, thrifty appearing individuals should move the breeder toward this goal without requiring the actual measurement of feed consumed.

5. Cows that wean heavy calves —sufficient milk production. Beef cattle producers do have trouble with cows that produce too much milk, but at the present time a bigger problem is cows at the other extreme.

It is impossible here to go into a detailed discussion of the principles of heredity, but it is necessary to have a knowledge of some of the important fundamentals if a breeder is to be successful.

The first of these is that the sire and dam contribute equally to the inheritance of each offspring. Therefore, in studying the pedigree of any individual, both sides of the pedigree should receive equal attention. However, in selecting a herd sire, more emphasis should be placed on his selection than on the selection of any individual female replacement, since he leaves many more offspring in the herd than does any one cow. For this reason, a breeder should expect to pay considerably more for a herd sire than for any individual female.

The breeder should always remember that the appearance of an individual and how it grows, produces and reproduces is the result of what it inherits from its parents and the feed and care it receives. It is important to remember this in selecting highly fitted individuals and to take into account that least part of the superiority that you see is the result of better than average feed and care.

Quite frequently we hear breeders express amazement at the differences between full brothers or full sisters. Identical pedigree (full brothers or full sisters) does not mean identical inheritance, since parents give only half of their hereditary material to each of their offspring.

A fourth fundamental is that the appearance or performance of a bull does not tell how he will breed. The only accurate measure of the breeding value of any cow or bull is the average merit of all of its offspring. In other words, we never know the actual transmitting ability of an individual until it has reproduced.

Selection and Improvement

Livestock breeders have at their disposal three tools or means of controlling animal inheritance. By this we do not mean that the breeder can actually control the inheritance of any given indivi-

dual to be born, but he can control to a certain extent the average kind of individuals he produces, and guide his breeding toward his objectives. The first of these tools is selection. By selection we mean permitting certain cows and bulls to leave more offspring in the herd than are left by others. In the end the breeder's success depends on his ability to select the right animals no matter what system of mating he may use.

There are several important factors that the breeder should keep in mind in making his selections. First of all, he should remember that the more characteristics for which he selects, the less emphasis he can attach to each. The less emphasis that each receives, the slower will be the improvement in that trait. For this reason, it is extremely important that he give more attention to the economically important characteristics and pay less attention to fancy and minor points.

Many times in selection we select for a certain trait with the belief that it is associated with something else of real importance. For example, some would select for beef type on the basis of head shape. It is impossible to find any actual data which would prove much correlation between body conformation and head type. If you want wide, deep, block cattle, you had best select for wide, deep, blocky cattle rather than something that bears a slight relationship to that type. In other words, place the primary emphasis on the trait you want to improve. Even if there is a high relationship between two things, you will still make the fastest progress by direct selection for the one you want.

Accurate selections can be made only if accurate, complete records are available on which to base the selections. Records that are needed for improving beef cattle are records on reproduction, size at weaning time, growth rate in the feed lot, and type or conformation. It is important that these records be kept on a practical basis so that it does not become a burdensome and impossible task. They need not be elaborate and in great detail but should be complete enough so that the poorer individuals in these various respects are permanently identified and they and their descendants eliminated from the breeding herd when b e t t e r replacements are available. Many times we hear it stated that purebred breeders do not keep these records. However, it is definitely known that some of the larger and better breeders of all beef breeds do keep most of these records and profit from them. In the case of weight or size, they may not be actual weights but at least recorded statements of general observations

as to size.

Selection may be based on three things. It may be based on the individual itself, including both its type and performance. It may be based on pedigree in which case it should not be based merely on the names in the pedigree but on the type and the performance of these ancestors and their descendants. This would include information on the brothers and sisters of the individuals in question. There is probably considerable difference of opinion concerning the relative importance to attach to individuality and pedigree. Possibly the best general rule in this regard is to use pedigree as an accessory in selecting between individuals that are of about equal merit in their own type and performance. Of course, we are always looking for cattle that are outstanding both in individuality and pedigree, but if a choice must be made between a superior individual with a rather poor pedigree and a poor individual with a popular pedigree, we would usually recommend selecting the former. Always remember that almost 90 per cent of what an individual inherits comes from three bulls—its sire and the dam's sire and maternal grandsire. This should emphasize the unsoundness of attaching much significance to any individual that appears only once four or more generations back in a pedigree. The third thing on which selection may be based and one that is available much later is the type and performance of offspring, often referred to as progeny tests.

Study Conditions

In going into other herds to select a future herd sire or replacement females be s u r e to study thoroughly the conditions under which these animals have been raised. If a bull has been raised under extremely favorable conditions and then is used in a herd under less favorable management, you cannot expect him to reproduce all of his desirable characteristics unless his offspring are also raised under conditions similar to those under which he was raised. It is not sound to pay a higher price for a poorer-than-average bull in a well known herd than for an outstanding bull in a smaller herd that is not so well known, if your aim is to improve your cattle.

A second means available to the breeder for controlling inheritance is inbreeding or linebreeding. This is a system of mating related animals and tends to break the population or herd into families. It is probably the most powerful tool available to livestock breeders and has been used by some of the better breeders in all classes of livestock. Inbreeding or linebreeding should be practiced only in herds of superior cattle,

since it tends to fix the characteristics that are present in the herd. If they are mediocre or poor animals, inbreeding will tend to fix that mediocre or poor type and performance. Inbreeding should not be practiced without rigid selection. Inbred animals tend to reproduce more uniformly and are, therefore, more prepotent. Inbreeding will usually result in lowered vigor and performance. It is the best means available for bringing to light undesirable inheritance and thereby enables the breeder to eliminate this inheritance from his herd.

The third tool for controlling inheritance is outcrossing, or the mating of cows with an unrelated bull. The success of this system of mating also depends on the ability of the breeder in selecting the animals that are to be mated. It is a method that is quite frequently used to correct faults that crop out in a herd. These faults can be corrected by bringing in an outcross that is strong where the herd is weak. Outcrossing lowers breeding value in that it produces cattle that do not transmit uniformly to their offspring. Outbreeding usually results in increased vigor and performance.

Purebred Breeders

The ultimate success of the purebred breeder and the usefulness of his breed is dependent on breeding the kind of cattle that will make the most profit for the commercial producer and that will produce the kind of product the consumer wants. Therefore, his first prerequisite is that he have sound objectives in mind. Next, to progress toward these objectives, he must keep and use records that will help him to make more accurate selections of bulls and replacement females.

Since there is a wide range in the quality of purebred herds, recommendations to purebred breeders should be broken down into at least two categories. First might be the recommendations on breeding systems in purebred herds that are average or below in type and performance. In these herds, it should be strongly recommended that outcrossing be the principal system of mating. These breeders can make the most rapid improvement in their herds by bringing in the best bulls possible that are unrelated to females in their herds. This is essentially a grading-up process and is similar to what should be done by commercial producers. However, the purebred breeder is expected to put considerably more emphasis on obtaining outstanding sires. Not only is it important to bring in and use outstanding sires, but he should also practice rigid selection among his replacement females. Inferior females in the herd should be replaced with better females from other herds

whenever possible. These breeders should take every opportunity to study the methods and the cattle of successful breeders.

In the superior purebred herds some inbreeding or linebreeding should be used to fix this superiority in type and performance and thereby increase the uniformity of breeding and prepotency. Since inbreeding should not be carried on too intensely, this system of mating is easier to carry out in the larger herds. In large herds it is possible to close the herd to outside blood and practice linebreeding without doing too much inbreeding. In smaller herds this can be accomplished by purchasing bulls that are related to previous sires used in the herd. Good results from a certain bull should be a recommendation to return to the same herd and purchase a bull related to him for his successor. If small herds are closed entirely to outside blood, the inbreeding will increase so rapidly that it may be difficult to practice selection rigid enough to eliminate undesirable characteristics as they show up.

Commercial Breeders

Inbreeding should never be practiced in commercial herds, since it usually results in lowered vigor and performance. Outcrossing, grading up, and a sound selection program are fundamental to the commercial breeder's success. It is not practical for the commercial producer to keep the records that we would expect of the purebred breeder, but it will usually be worth his while to have some simple records on which he can base selection of females. Unproductive cows should be culled from the herd and be replaced by heifers from the better cows. He should certainly place his emphasis in selection on traits of economic value. With the purebred breeders leading the way and producing superior animals, he can make the most rapid progress by using good purebred sires.

Always remember that a cheap bull may prove to be the most expensive bull when his calf crop is on the ground. A good bull is seldom too expensive.

* * *

Net farm earnings on feeder cattle—hog farms in northwestern Illinois dropped from $40 to $23 an acre from 1951 to 1952, according to a 250 farm survey of Farm Bureau Farm Management Service records.

* * *

Cash receipts from farm marketings in the first quarter of 1953 amounted to 6.6 billion dollars, down two per cent from last year. Lower average prices offset the six per cent increase of the volume of marketings.

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Farm Business Management — By Robertson and Woods. 1951. 546 pages, 248 illustrations. J. B. Lippincott. Prepared for use in all farm management and marketing courses. Combines the most up-to-date and authoritative content with the best farming practices available today in the field of farm management $3.80

The Hog Annual — Published by Farm Quarterly Magazine. March, 1952. Approximately 500 pages. First complete hog annual ever published. Contains names of all breed associations, secretaries, pig hatcheries, livestock yards, livestock commission salesmen, all of the hog farmers who sell over 400 hogs a year—fine articles on housing, sanitation, breeding and farrowing ...$5.00

Feeds and Feeding — New Edition (Abridged) — Published May, 1949. By Proffessor F. B. Morrison, Cornell University. 630 pages. Illustrated. $3.50

Cowphilosophy — By Mark Keeney Second edition to which has been added the "Herdsman's Corner" and new material by the author. Fifty per cent larger. Holstein-Friesian World. A best seller since its first appearance in 1939. No agricultural book ever received a more enthusiastic reception from breeders and educators. Many college professors made Cowphilosophy required reading for their advanced classes in animal husbandry $3.00

Grasses and Grassland Farming — By Hi Staten. Published December 1952. Latest, most comprehensive authority on pastures and grassland farming. Includes latest discoveries, research and experiences of farmers and ranchers. An interesting book you won't want to put down. Introduction by Louis Bromfield. Seventeen chapters, everything from "Grass the Money-Maker" to "Grass Breeding." 320 pages. Clothbound. Well illustrated $5.00

Livestock Health Encyclopedia — By Seiden. Published November, 1951. Springer Publishing Company. Most recent veterinary book published, over 600 pages of helpful and useful information on how to diagnose and treat every ailment of livestock. Well illustrated $7.50

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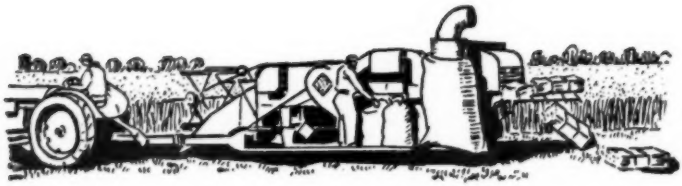

New Foreign Farm Machines

. . . They Will Surprise You

YOU won't see the machine above on your neighbor's farm or even in this country, but it is being manufactured and sold in England and on the Continent. Study the illustration and you will see that it (1) cuts the standing crop, (2) threshes and delivers grain for bagging, (3) catches chaff in a big bag or blows it on the field through a big elbow and (4) ties the straw in loose bales ready for the barn.

Other English and European farm machines are just as surprising. There is the German UNIMOG, for instance. At first glance it looks like the cab-over-engine part of a semi-trailer truck, but actually it is the powered carrier of a number of specially designed farm machines including a combine and forage harvester which fit over, around and on it.

Another unusual tractor is the Lanz ALLDOG. Built like the Allis-Chalmers G, it has two long horizontal bars extending between the rear mounted engine and the front wheels. On these bars can be hung or placed everything from a wagon box to a combination of fertilizer drill, seeder and drag for once-over seeding.

Like foreign cars, it looks like foreign farm machinery is going to make United States manufacturers set up and take notice.